

# Eight Point Wind Feasibility Assessment

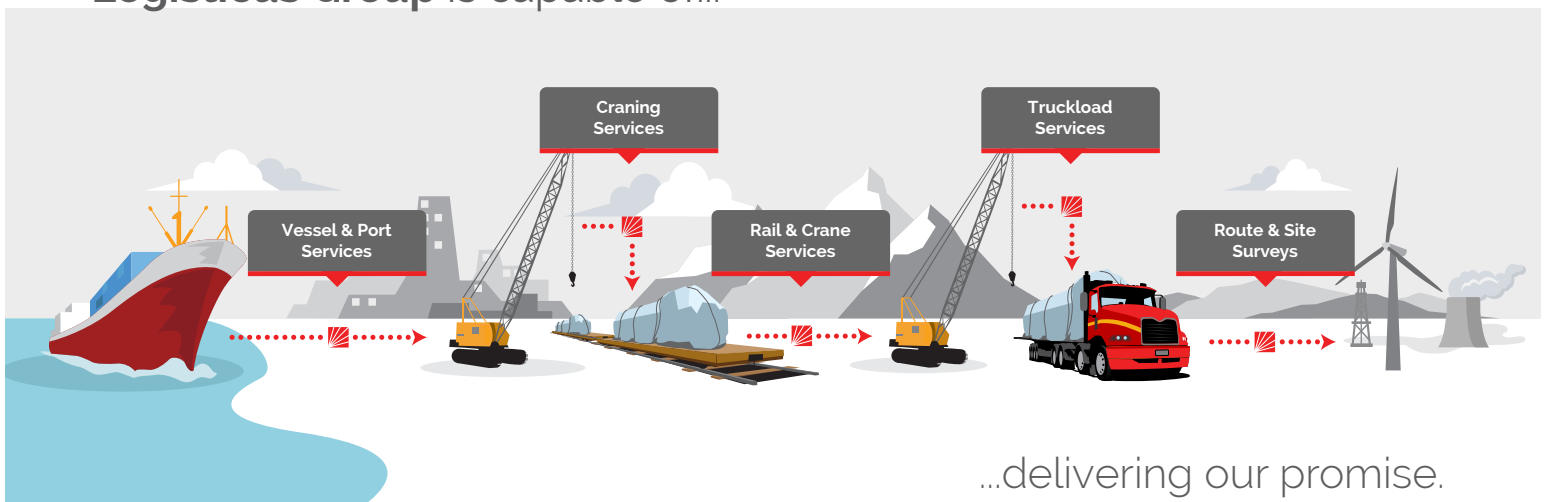
Performed on December 1<sup>st</sup>, 2016 by:

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**DISCLAIMER:** This document is for reference purposes only. All conditions stated within this survey will need to be reverified by transport company before execution of shipment along route described herein. Any road, bridge and/or failure along route that creates damage or delay cost are the responsibility of the shipper. All conditions sited herein are subject to change by controlling agent.

**This document is not meant to replace the trucking companies route survey in any way.** A secondary audit should be completed 30 days before actual transport to identify any new risk.

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# Checklist

- ✓ Alternate Means of Transport (Barge/Rail)
- ✓ Weather:
- ✓ Weather Origin:
  - ✓ Weather Destination
  - ✓ Frost Law Impacts
- ✓ Trailer Configuration
- ✓ Overhead Obstructions (Bridges)
- ✓ Overhead Obstructions Other (Wires/Trees)
- ✓ Structures (Weight on Bridges)
- ✓ DOT Construction
- ✓ Permits Needed:
  - ✓ Blanket Permits
- ✓ Permit Application Address
- ✓ Additional Permit Requirements
- ✓ Restricted Travel Hours
- ✓ Additional Escort Requirements
- ✓ Police Escorts
- ✓ Bucket Trucks
- ✓ Road Modifications:
  - ✓ On Site
  - ✓ Off Site
- ✓ Turning Radius
- ✓ High/Low Spots
- ✓ Grades
- ✓ Site Laydown Area
- ✓ Truck Staging:
  - ✓ On Site
  - ✓ Off Site
- ✓ Road Bonding
- ✓ Current Road Conditions

# Project Overview

## EIGHT POINT WIND FEASIBILITY ASSESSMENT

**Purpose:** This feasibility assessment will be provided as an informational reference document for the upcoming Eight Point Wind Project. Individual carriers will have to run their own route surveys per state permitting laws.

**Project Name:** Eight Point Wind Project

**Customer Name:** NextEra Energy Inc

**Project Start Date:** 2018 to 2019

**Project Address:** Logisticus recommends two separate site entrances:

**Entrance 1 (North Turbines)** - Intersection of CR61 and NY417 Greenwood, New York 14839

**Entrance 2 (South Turbines)** - Intersection of CR98 and NY248 Rexville, New York 14877

**GPS Coordinates:**

**Entrance 1 (North Turbines)** - 42° 9'11.78"N 77°42'49.06"W

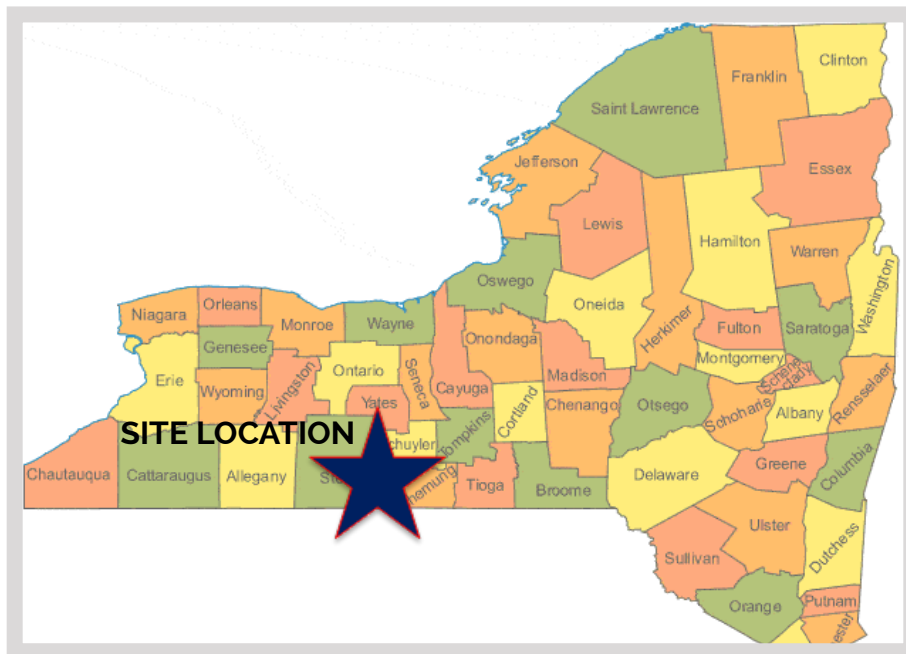
**Entrance 2 (South Turbines)** - 42° 4'49.36"N 77°40'6.96"W

**Component Type:**

27 – GE 3.43mw-137m rotors on 110 Towers

5 – GE 1.7mw-103m rotors on 80m Towers

**Turbine Quantity:** 32 complete WTG



# Project Overview continued

Component Dimensions:

<b>GE 3.x-137 /110m Tower</b>					
<b>Section</b>	<b>Weight (lbs)</b>	<b>Length</b>	<b>Width at bottom</b>	<b>Width at top</b>	<b>Height</b>
Base	130,073	39.3	14.08	14.08	N/A
Mid C	127,868	49.5	14.08	14.08	N/A
Mid B	130,073	68	14.08	14.08	N/A
Mid A	127,868	91.75	14.08	14.08	N/A
Top	97,003	98.3	14.08	10.2	N/A
Blades	39,240	220.5	N/A	N/A	13.1
MH	202,825	31.2	13.2	N/A	12.5
Generator	24,251	10.83	5.25	N/A	6.9
HUB	76,060	11.5	12.5	N/A	10.83
Hub - Nose Cone	1,102	9.7	9.7	N/A	5.11

<b>GE 2x-107 /80m Tower</b>					
<b>Section</b>	<b>Weight (lbs)</b>	<b>Length</b>	<b>Width at bottom</b>	<b>Width at top</b>	<b>Height</b>
Base	129,653	71.8	15	14.1	N/A
Mid	99,904	84.9	14.1	11.2	N/A
TOP	88,700	96.8	11.1	10.1	N/A
Blades - 107 rotor	23,200	171.3	7.8	N/A	N/A
Blades - 116 rotor	24250	187	7,8	N/A	N/A
MH - Fully Assembled	152,165	29.8	12.7		12.1
MH - Generator OUT	132,100	29.8	12.7		12.1
Generator Only	18,700	9.6	6.2		6.7
HUB	60,700	12.5	11.3		11.3
Hub - Nose Cone	1,102	9.9	10.2		6.6
DTA	6,614	7.6	3	N/A	8.9

Assumed Source Locations:

<b>8 Point Wind Source Locations</b>				
	<b>Towers</b>	<b>Blades</b>	<b>Nacelle</b>	<b>Hub</b>
<b>Garden City, KS</b>	X	X	X	X
<b>POI Albany, NY</b>		X	X	X
<b>Rail Siding - Dansville, NY</b>			X	X
<b>Pensacola, FL</b>			X	X
<b>Trinity, Illinois</b>	X			
<b>Ventower, MI</b>	X			
<b>Marmen, QC</b>	X			
<b>POI Oswego, NY</b>	X	X	X	X

## Project Overview continued

### TRAILER DIMENSIONS AND CONFIGURATIONS

**Tower Transport Trailers** – Typically, tower sections transport on Schnabel-type trailers. Base and all mid sections will most likely be transported on Double-Schnabel's (front and back) and the top trailer most likely on a Schnabel-dolly configuration to save in overall length of the vehicle.

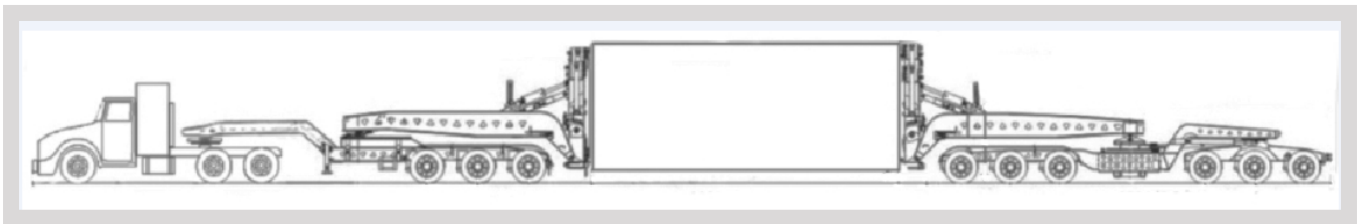
**12-Axle Double Schnabel (Base and Mid):** \*estimated\*

Width – 15'1" (4.6m)

Height – 15' 9" (4.7m)

Length – 140' (43m)

Weight – 225,000lbs (112.5 tons)



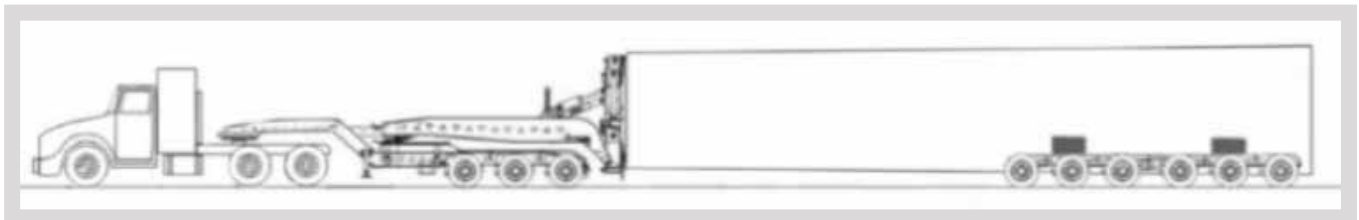
**Schanbel-Dolly (Top Section):** \*estimated\*

Width – 14' 6" (4.4m)

Height – 15' (4.5m)

Length – 110' (33.5m)

Weight – 165,000lbs (82.5tons)



## Project Overview continued

**Nacelle Transport Trailers** – Nacelles are typically transported via multi-axle trailer setups. Typically, these trailers with the nacelle are over 200,000lbs and make this combination the “heaviest” in overall Gross Vehicle Weight. These trailers are not as long as some of the Double Schnabel or blade trailers so they are not the limiting factor for physical clearance issues along the route which include bridges.

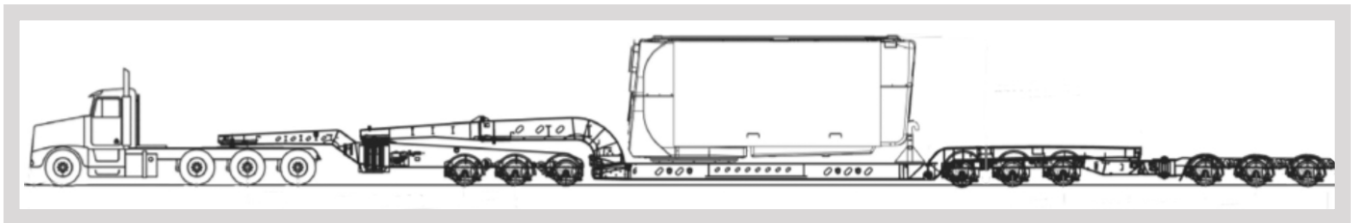
**13-Axle (Nacelle):** \*estimated\*

Width – 15.4 feet (4.7m)

Height – 14.8 feet (4.5m)

Length – 122 feet (37m)

Weight – 250,000lbs (125tons)



**Hub Transport Trailers** – 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.

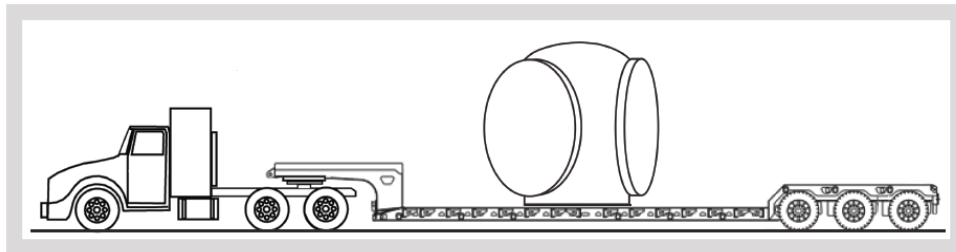
**3-Axle Double Drop (Hub):** \*estimated\*

Width – 13 feet (3.9 meters)

Height – 14.3 feet (4.4 meters)

Weight – 100,000 lbs (50 tons)

Length – 95 feet (30 meters)



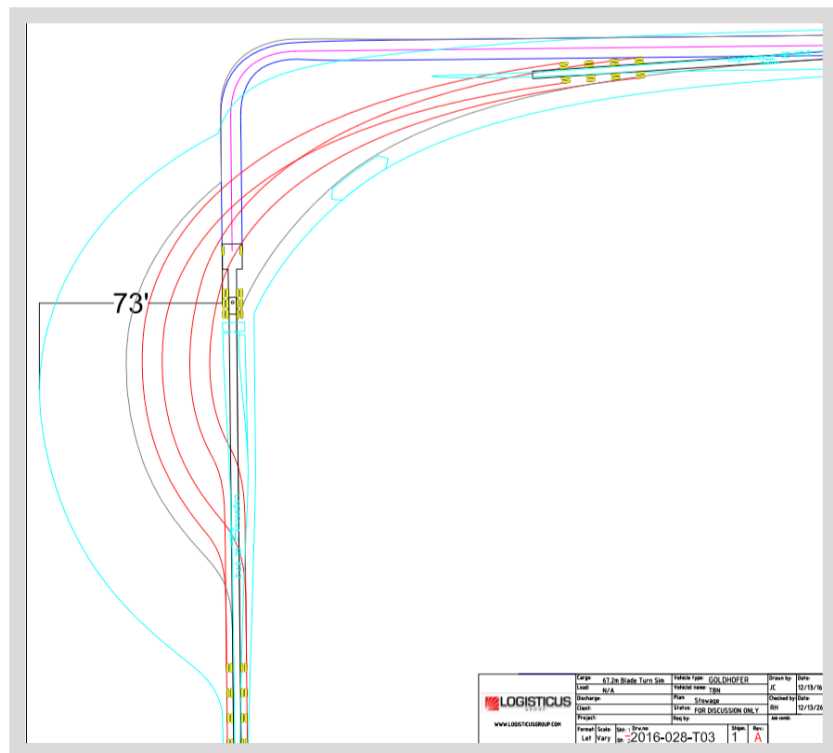
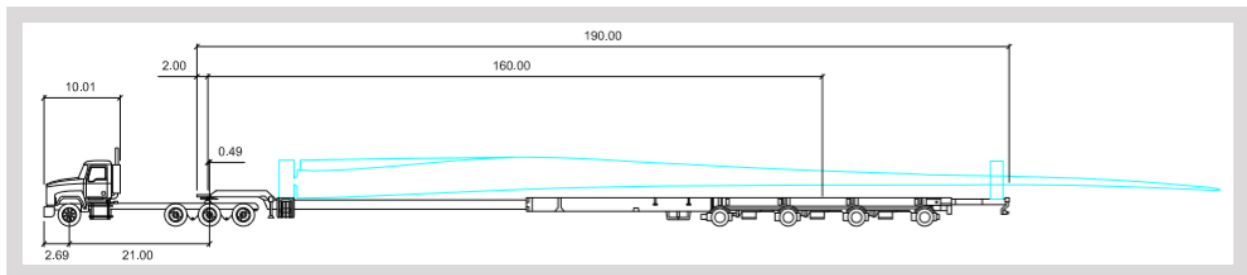


# Project Overview continued

**Blade Transport Trailers** - These GE 67.2m Blades are the largest blades to ever be transported in New York State. Blades are transported on specialized blade trailers which are built to extend to support both the root and tip ends. Due to the size of the blade and possible rear overhang. While these trucks are making turns the counter swing is now needed to be analyzed to ensure no contact with the Tip of the blade is made with obstructions, such as signage and utilize poles. Due to the rear tip stand location at 55m, most standard trailers cannot handle the blade (including all Trailking Models). In order, for Trailking trailers to work beam inserts will be needed which cannot be collapsed into "legal loads" which needs permits empty on the way out as well.

**Blade Trailer Configuration:**

- Width - 13.6 feet (4.1 meters)
- Height - 16.5 feet (4.4 meters)
- Weight - 98,000lbs (44 tons)
- Length - 215 feet (65.5 meters)



# Project Overview continued

## TRANSPORT STRATEGY

**Overview** – At the time of the this survey all GE source locations are not known; Logisticus used historical source locations which have been used in the past for projects in the NE. Should source locations change, no major impacts will be affected with routes in Pennsylvania and New York to the project site. Once at a US or Canadian source location or port of import components will then be trucked to the project site utilizing standard over-the-road trailers designed for wind turbine transport.

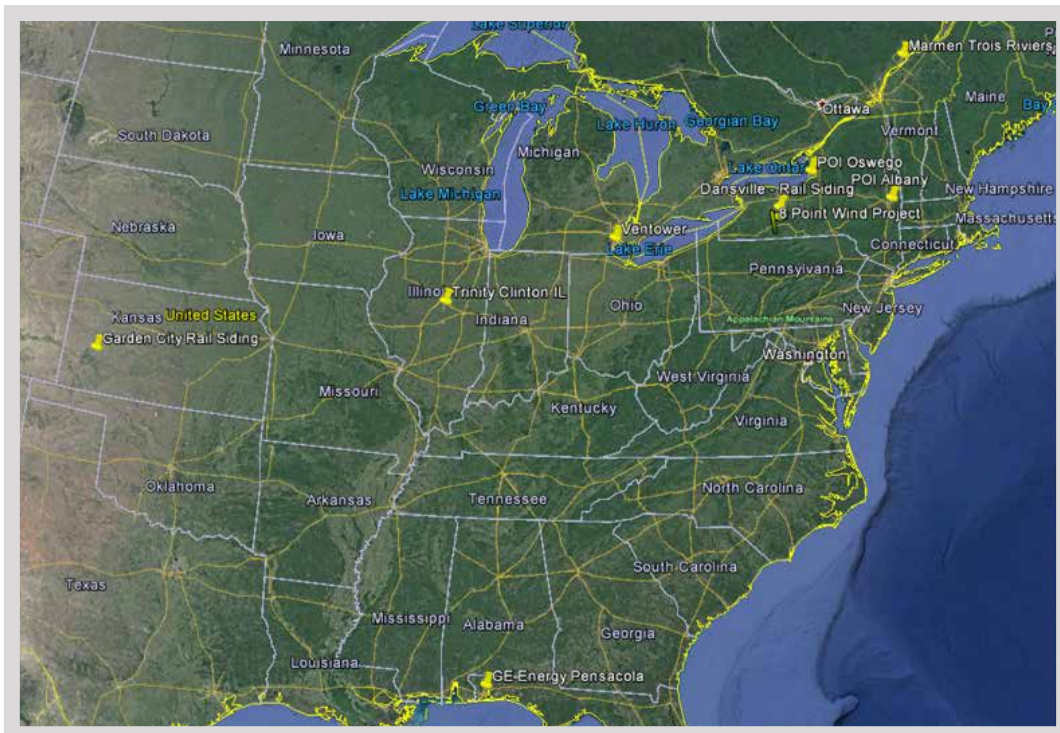
➤ **Ports:**

- Two potential ports were identified for this assessment
  - Port of Import – Albany, New York
  - Port of Import – Oswego, New York added by Logisticus as an option (not historically used by GE in the past)

➤ **Rail Sidings:**

- Dansville, New York

8 Point Wind Source Locations				
	Towers	Blades	Nacelle	Hub
Garden City, KS	X	X	X	X
POI Albany, NY		X	X	X
Rail Siding - Dansville, NY			X	X
Pensacola, FL			X	X
Trinity, Illinois	X			
Ventower, MI	X			
Marmen, QC	X			
POI Oswego, NY	X	X	X	X



# Project Overview continued

## ORIGIN DATA (NACELLE AND HUB): GE ENERGY PENSACOLA, FL

**Origin Address:** 8301 Scenic Highway Pensacola, FL 32514

**GPS Coordinates:** Latitude: 30°30'54.14"N Longitude: 87°10'03.22" W

**State Permit Address:** 8301 Scenic Highway Pensacola, FL 32514

**Topography:** The Plant is located just north of the City of Pensacola along the Escambia Bay; there is no threat of flooding due to the elevation of the plant above the water. However there is a medium risk of weather impacts as this location is prone to mild/medium hurricane impacts (to infrastructure).

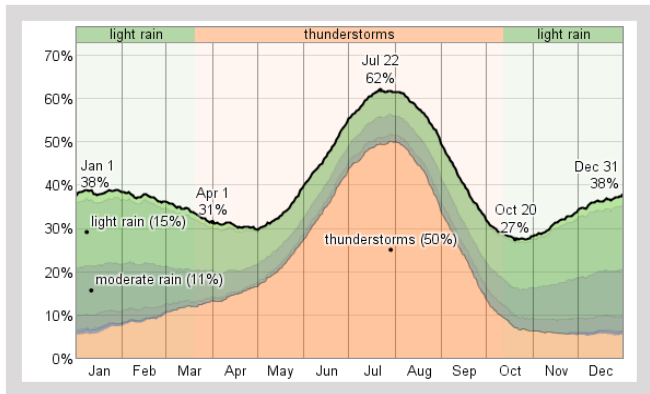
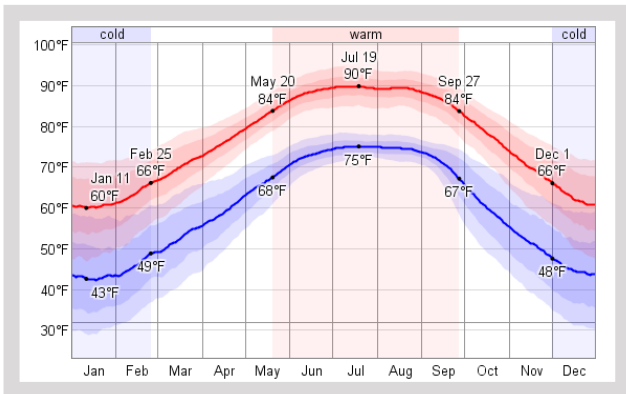
**Elevation:** 14 feet

**Weather:**

**Climate:** Escambia County is located in a Humid Subtropical Climate with mild winters and hot humid summers. Typical summers have highs in the lower 90's along with an occasional evening thunderstorm.

**Annual Rainfall:** 64.28 inches

**Average Temperature:** average 51.4°F in January and 90°F in July



GE Energy Pensacola Florida Facility

# Project Overview continued

## ORIGIN DATA (TOWERS): MARMEN CANADA

**Origin Address:** 845 Rue Berlinguet, Trois-Riviers, Quebec Canada G8T 8N9

**GPS Coordinates:** Latitude: 46°22'54.42"N Longitude: 72°31'50.32"W

**Topography:** Trois Riviers is located in the Saint Lawrence Lowlands, where a deep ravine created by the Saint Laurent Seaway which the City is on the north side of. The Plant is located just north of the City within the city limits in an industrial complex off of Autoroute Felix-Leclerc.

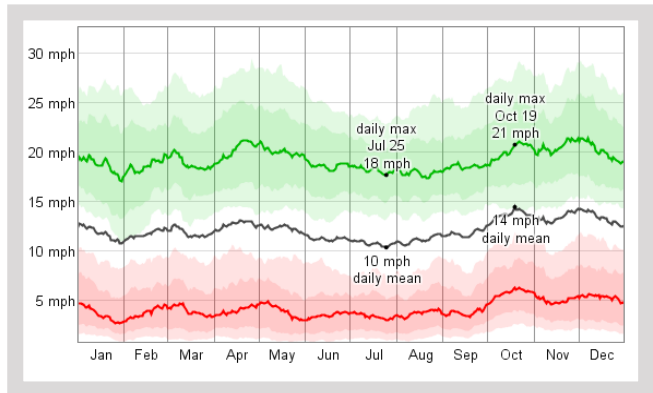
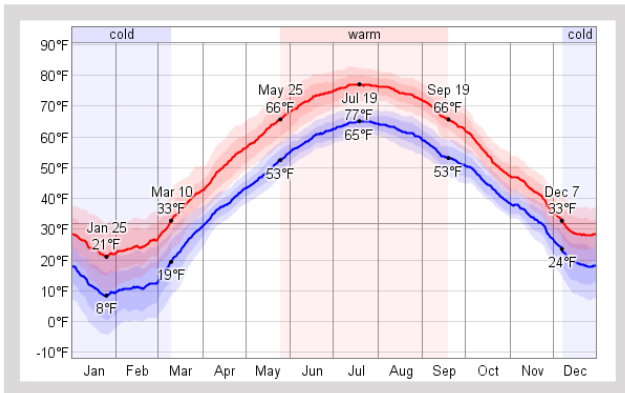
**Elevation:** 112 feet

**Weather:**

**Climate:** The City is located in a humid continental climate where winters are long, cold, and snowy and warm summers. Spring and autumn are short and crisp with the most precipitation in the summer months.

**Annual Rainfall:** 44.2 inches

**Average Temperature:** annual average 19.2°F in January and 77.9°F in July



Marmen Energy – Trois Riviers, Quebec Canada



# Project Overview continued

## ORIGIN DATA: GARDEN CITY, KS

**Origin Address:** 110 S Jennie Barker Rd, Garden City, KS 67846

**GPS Coordinates:** 37°57'37.16"N, 100°49'44.51"W

**Topography:** Garden City is in the High Plains Region of the Great Plains and lies on the north side of the Arkansas River. The terrain can be described as flat to rolling. Naturally occurring sand dunes occur just south of the town along the Arkansas River.

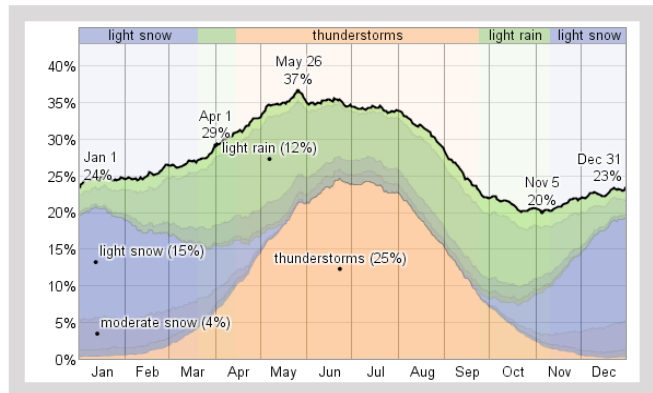
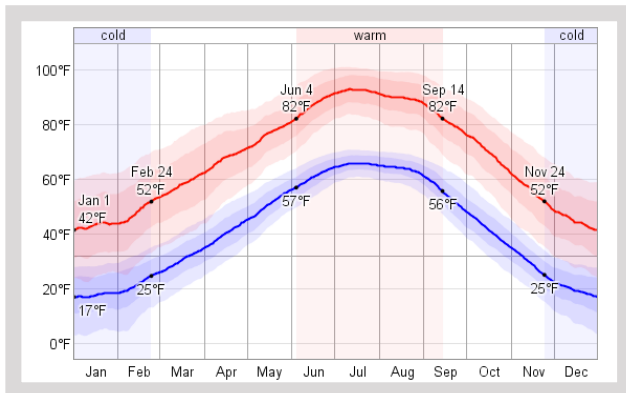
**Elevation:** 2,838 feet

**Weather:**

**Climate:** Garden City has a semi-arid steppe climate with hot, dry summers and cold, dry winters. On average, January is the coldest month, July is the hottest month, and June is the wettest month. The average temperature in Garden City is 54°F. Over the course of a year, temperatures range from an average low of 17.7°F in January to an average high of 91.8°F in July. The high temperature reaches or exceeds 90°F an average of 66 days a year and reaches or exceeds 100°F an average of 11 days a year. The minimum temperature falls below the freezing point 32°F an average of 138 days a year. The hottest temperature recorded in Garden City was 110°F as recently as June 8, 1985; the coldest temperature recorded was -22°F on March 11, 1948.

**Annual Rainfall:** 19.47 inches

**Average Temperature:** High of 86°F in June and low of 18°F in January



# Project Overview continued

## PROJECT SITE DATA: REXVILLE, NEW YORK

**GPS Coordinates:** 42° 5'34.08"N 77°42'14.87"W

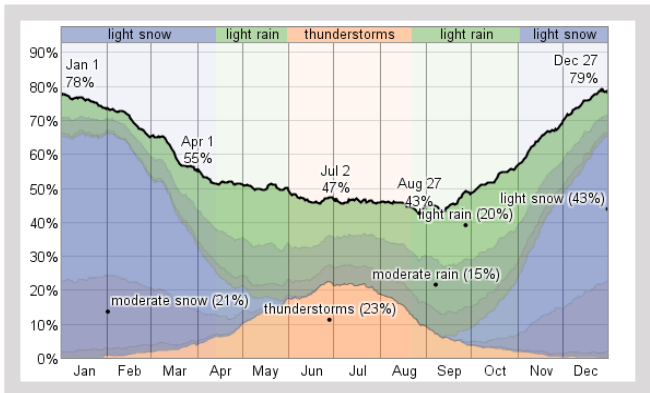
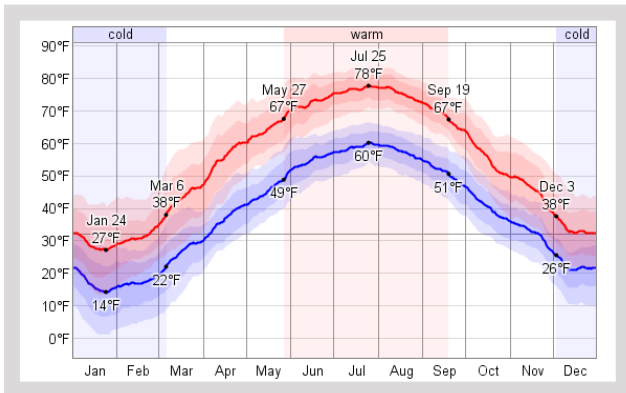
**Topography:** The project site falls within the Allegheny Plateau which is formed by a series of hills and spurs entering Pennsylvania. The area has the second highest paved road in New York state approaching 2,500ft, there will be grades leading up to the project site mostly on paved roads. Once near site the turbines are scattered throughout ridgelines and scattered valleys formed by old glacial plateaus throughout the Allegheny Mountains.

**Weather:**

**Climate:** Rexville has a humid continental climate. Winter temperatures average below freezing during January and February. Summer like conditions prevail from June to July to early September, cold air damming east of the Appalachian leads to protracted periods of cloud cover and precipitation east of the range from Oct to April.

**Annual Rainfall:** 38 inches

**Average Temperature:** Average high 68°F in July and average low 37°F in January



Site shot facing northeast from County Road 60

# Port and Rail Facilities

## PORT OPTION - POI PORT OF ALBANY

### Port Description:

**Port Name:** Albany Port Authority

**Port Location:** Albany, New York

**Topography:** The port is located the Hudson River in the city of Albany, besides weather impacts no major issues with geographical impacts.

**General Port/Terminal Description:** The Port of Albany has several berths which can accommodate most Project Cargo vessels. The port has been used historically for Project Cargo and Wind Turbine Components in the past.

### Pier Terminal Facilities:

**Pier Information:** Port has many berth locations for project cargo

**Water Depth:** 31 feet (9.45 meters)

**Pier Length:** several berths which make up over 1,500 feet

**List type of Cranes:** Liebherr Mobile Harbor Cranes with 120tons and Crawler Crane with 114 tons

**Storage Location in Relation to the Pier:** Directly adjacent to berth roughly 7 acres, off site storage of another 10 acres across City Road.

**General Description of the Pier:** Port of Albany is a medium size port which is relatively active with Project Cargo from a local GE plant in the area. The port has tailored itself to Wind Projects of this size and can handle delicate cargo such as Wind Turbine Blades. Half of the berths are rail served as well for direct vessel to rail discharge.

**Port/Terminal Security Information:** Port is fenced and secured with 24/7 on site security.

**Port Summary:** This option has extensive history with breakbulk and project cargo and can handle WTG components. The terminal has cranes and storage suitable for Wind Project Cargo, routing out of the port can be challenging however can be achieved.



Port of Albany Berth Locations

# Port and Rail Facilities continued

## PORT OPTION - POI PORT OF OSWEGO

### Port Description:

**Port Name:** Port of Oswego Authority

**Port Location:** Oswego, New York

**Topography:** The port is located on Lake Ontario and is the first US Port of Call and Deepwater Port on the Great Lakes from the St Lawrence Seaway. The Port is located on the southeast point of Lake Ontario.

**General Port/Terminal Description:** A full service deep-water marine terminal along Lake Ontario which geographically is the most suitable for projects in southwestern New York.

### Port Terminal Facilities:

#### Pier Information:

**Water Depth:** 27 feet

**Pier Length:** 1,400 ft wharf

**List type of Cranes:** unknown cranes on site

**Storage Location in Relation to the Pier:** The port has roughly 5 acres directly adjacent of the berth locations.

**General Description of the Pier:** unknown at time of this assessment

**Port/Terminal Security Information:** Port is fenced and secured with 24/7 on site security.

**Identification of Port/Terminal Storage Areas:** roughly 5 acres of paved ground

**Port Summary:** This port is smaller port for Project Cargo however has a good amount of vessel traffic for bulk shipments. Other OEM's have used this Port of Import for Wind Projects located in the Southern Tier of New York. The port would be a good option for this particular project and would serve the needs well due to their size.



Port of Oswego



## Port and Rail Facilities continued

### RAIL SIDING OPTION

**Rail Siding:** Dansville New York

**Siding Location:** LMC Industrial – 9431 Foster Wheeler Road, Dansville NY 14437

**GPS Coordinates:** 42°34'25.34"N 77°43'14.88"W

**Topography:** The facility is located at a old Foster Wheeler Industrial Warehouse which has a large rail facility attached to it. Very flat and roughly 20 acres of compacted ground ready to use.

**Rail Information:** served via CSX, roughly 1,400 feet of track

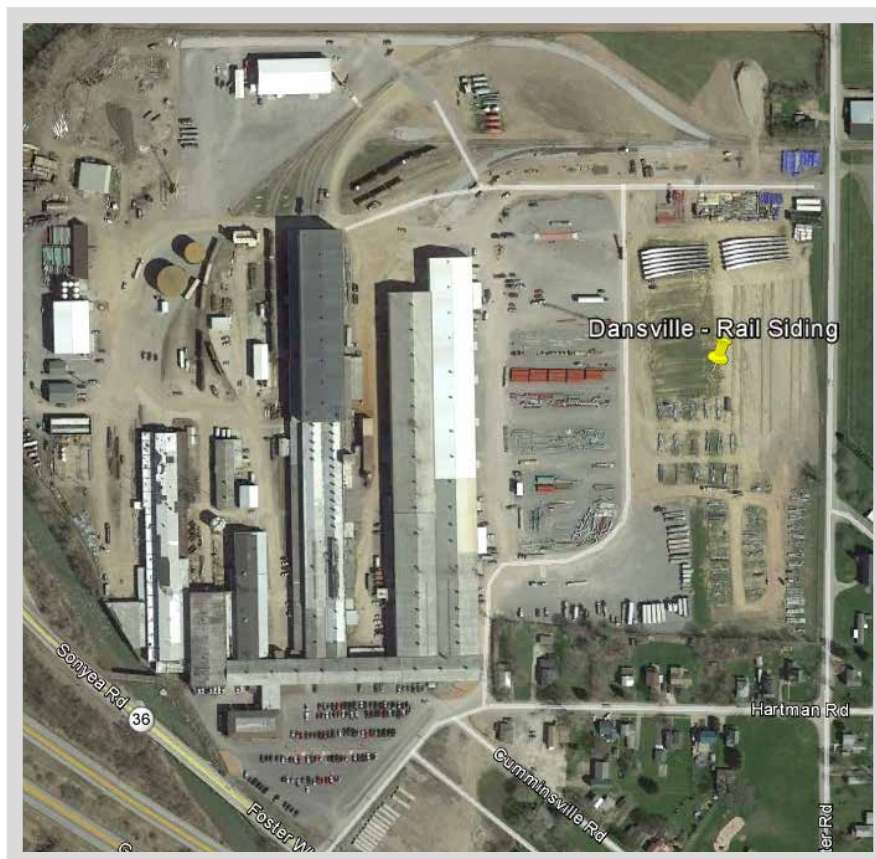
**Storage available:** roughly 20 acres, historically used for projects with 70 complete WTG units

**Storage Location in Relation to the Rail Siding:** directly south of the rail lines

**Number of Cranes:** unknown

**Security:** Secured and fenced

**General Rail Terminal Description:** Rail siding is part of a old Foster Wheeler facility which has roughly 20 acres of outside storage and 1,400 feet of track. OEM's have used this facility to store, both short and long term, WTG in the past years. Facility is served by CSX and has cleared Blades, Nacelles, and Hubs in the past. Logisticus is unsure about Tower Sections via rail due to width.



Dansville New York Rail Siding

# Truck Routes

## PRIMARY ROUTE - ALL COMPONENTS

### ROUTE OPTION 1

**Source Location** All Mid-West and Southern Option

**Detailed Route** US219 to NY98 to NY16 to NY39 to NY36 to Int390 (off and on several times for low bridges) to NY415 to Int86 (off and on several times for low bridges) to NY415 to NY417 to Greenwood (Split at site for northern and southern turbines)

**Off Site Road Improvements** Yes

**Holiday Restrictions** Yes (State)

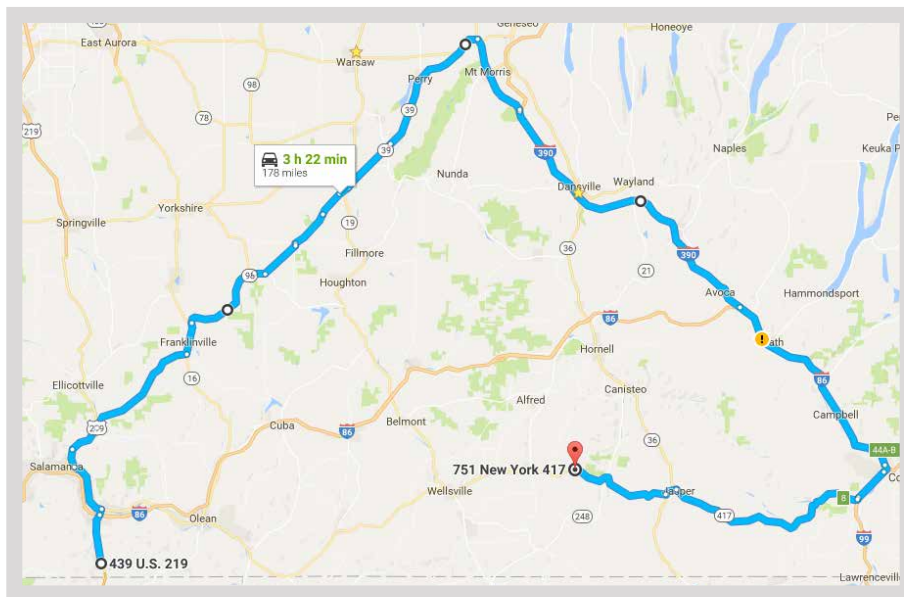
**Police Escorts** Yes (Blades Only)

**Structures/Bridges** None on State Routes

**Frost Law** Imposed County by County from March to May

**DOT Construction** Unknown for 2018

**Risk Level – Medium/High** DOT Construction – Improvements – Risk to 67.2m Blade



## SUMMARY

This route option has a **Medium/High Risk** Rating and is the primary option for wind component trucks from any source location in the Midwest or South. The towers and nacelles will have no problems on this route and most of the route has been used before for historical projects in the area. The larger blades are of high concern due to the tip swing out to roughly 73ft. This area of New York is very old and most routes will be on two-lane state highways with intersections that have signage and buildings in the way. State Police Escorts will be required in New York and Pennsylvania, and will slow down rotations due inspections and escorts. This option is contingent about any DOT construction projects in the area, which will impact routing. Interstate routing on Int-390 and Int-86 will be limited, however some portions can be used from exit to exit. Frost Law will impact timeline.

**Permits/Approvals Needed from:** NYDOT – Steuben County

# Truck Routes continued

## PRIMARY ROUTE - ALL COMPONENTS ROUTE OPTION 2

**Source Location** All Mid-West and Southern Option

**Detailed Route** US-219 to Int-86 (on and off ramps to avoid some low bridges) to NY415 to NY417 Greenwood (Split at Site for Northern and Southern Turbines)

**Off Site Road Improvements** Yes

**Holiday Restrictions** Yes (State)

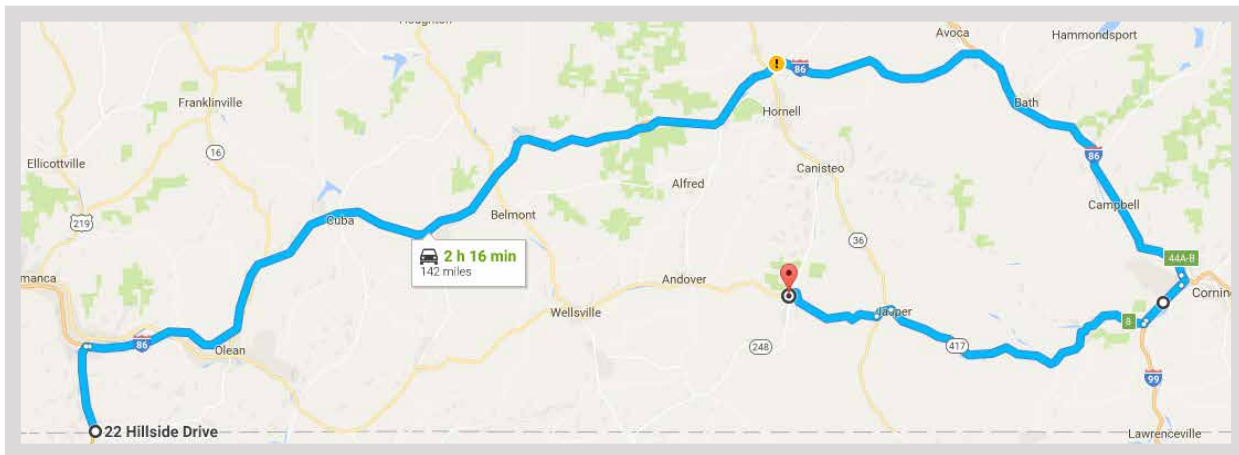
**Police Escorts** Yes (Blades Only)

**Structures/Bridges** None on State Routes

**Frost Law** Imposed County by County from March to May

**DOT Construction** Unknown for 2018

**Risk Level – Medium/High** DOT Construction – Improvements – Risk to 67.2m Blade



## SUMMARY

This route option has a **Medium Risk** Rating and is the primary option for wind component trucks from any source location in the Midwest or South. The towers and nacelles will have no problems on this route and most of the route has been used before for historical projects in the area. There are sections of the Interstate System (Hwy 86), which could have low bridges where the route will deviate off the highway to avoid these sections. State Police Escorts will be required in New York and Pennsylvania, and will slow down rotations due inspections and escorts. This option is contingent about any DOT construction projects in the area, which will impact routing. Interstate Routing on Int390 and Int86 will be limited however some portions can be used from exit to exit. Frost Law will impact timeline.

**Permits/Approvals Needed from:** NYDOT – Steuben County

# Truck Routes continued

## BACKUP OPTION – TOWERS, NACELLE AND HUBS ONLY ROUTE OPTION 3

**Source Location:** All Mid-West and Southern Option

**Detailed Route** US219 to NY98 to NY70 to NY36 to NY248 to NY417 to Greenwood (Split at Site for Northern and Southern Turbines)

**Off Site Road Improvements** No

**Holiday Restrictions** Yes (State)

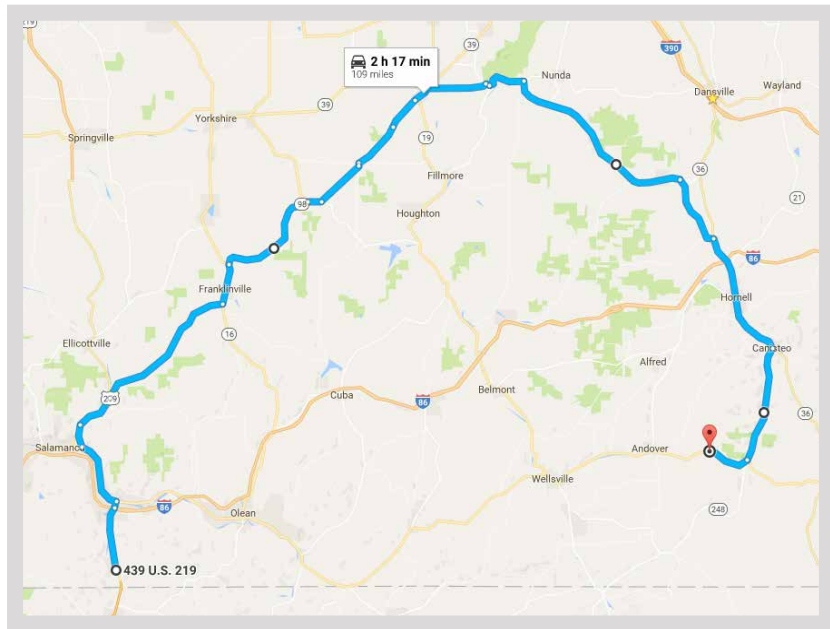
**Police Escorts** None

**Structures/Bridges** Limited on Height to 14'7 in height

**Frost Law** Imposed County by County from March to May

**DOT Construction** Unknown for 2018

**Risk Level – Medium** State Police Escorts – Limited to 14'7 in height



### SUMMARY

This route has a **Medium Risk** Rating and is the backup option from Primary Option 1. This route is limited to 14'7 in height, so some towers will not be able to utilize this route. This route does not have any off site road improvements until the town of Greenwood (Project Site Boundary Limit). Most of the loads on this route will NOT require state police escorts since they are below New York State Superload requirements. Logisticus recommends this route for loads less than 14'7 in height.

**Permits/Approvals Needed from:** NYDOT – Steuben County



# Truck Routes continued

## PRIMARY OPTION – ALL COMPONENTS

### ROUTE OPTION 4

**Source Location** Northeast Port of Imports/Marmen Canada

**Detailed Route** US20 to NY36 to Int390 and Int86 (Off and On serval times for low ramps) to NY415 to NY417 Greenwood (Split at Site for Northern and Southern Turbines)

**Off Site Road Improvements** Yes

**Holiday Restrictions** Yes (State)

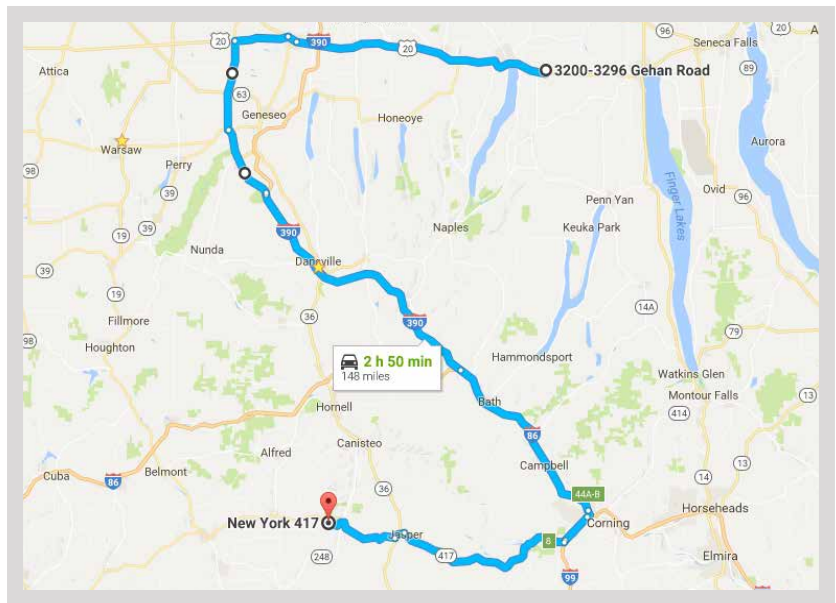
**Police Escorts** Yes (Blades Only)

**Structures/Bridges** None

**Frost Law** Imposed County by County from March to May

**DOT Construction** Unknown for 2018

**Risk Level – Medium/High** DOT Construction – Improvements – Risk to 67.2m Blade








## SUMMARY

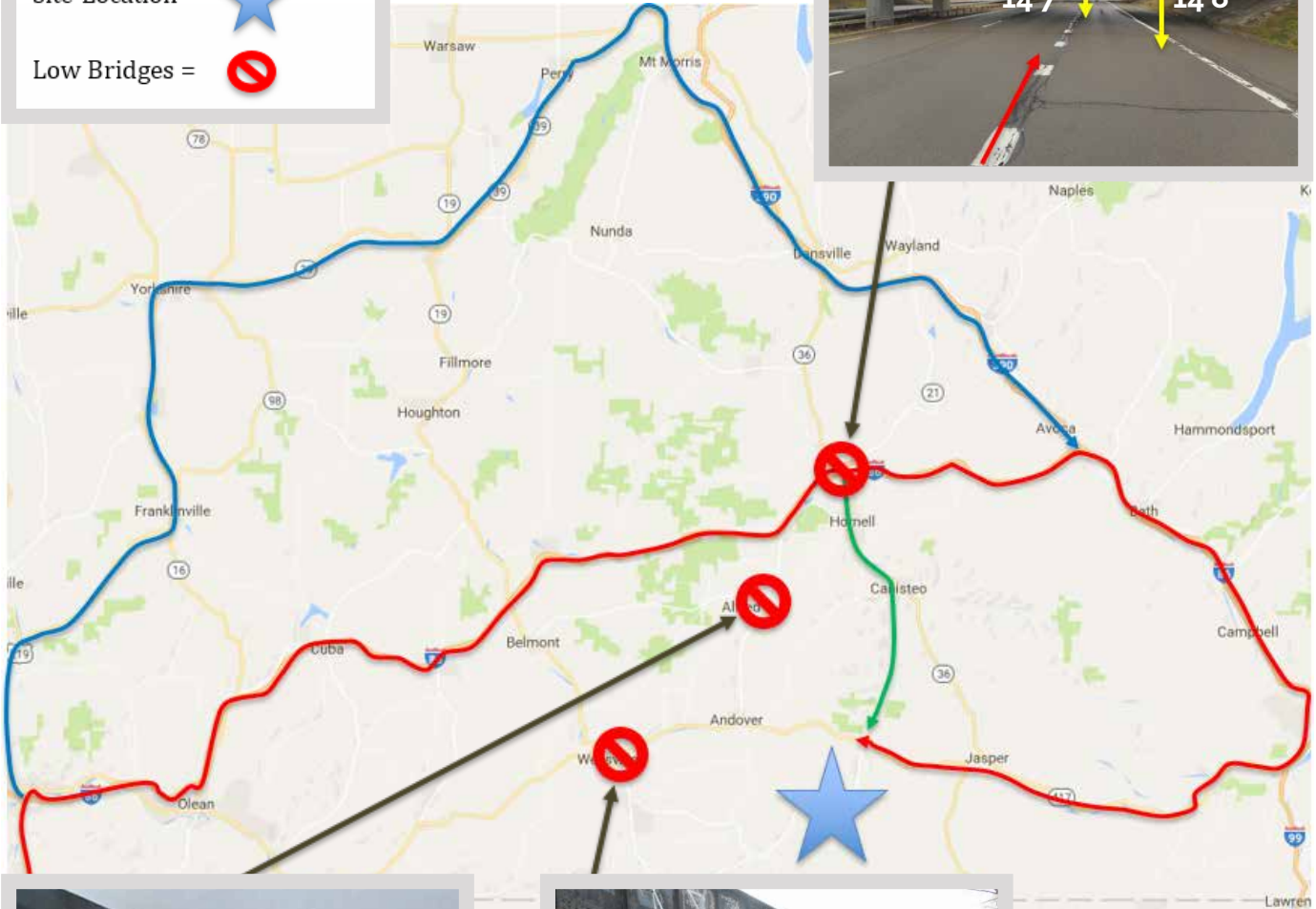
This route has a **Medium/High Risk** Rating and is the primary option for wind component trucks arriving from any origin site in the north or Port of Imports (Albany or Oswego). Routes for the height (towers) and length (blades) are extremely limited due to the infrastructure in the area. State Police will be needed on the blades due to length, however at this time Logisticus does not see any other section requiring them. There is one off-site road improvement in Jasper, which will need some modifications. There will be grades in the area on paved roads up to 10%, however Logisticus believes that should not be a problem. This option is contingent about any DOT construction projects in the area, which will impact routing. Interstate Routing on Int390 and Int86 will be limited however some portions can be used from exit to exit. Frost Law will impact timeline.

**Permits/Approvals Needed from:** NYDOT – Steuben County

# Truck Routes continued

**Key:**

- Route Option 1 = 
- Route Option 2 = 
- Route Option 3 = 
- Site Location = 
- Low Bridges = 



Hwy36 underpass under Int86 in Hornell



NY21 rail overpass in Alfred Station



NY417 train overpass in Wellsville

## Transportation Permits

### NEW YORK

Permits are valid for one trip over a 5 day period. Travel is permitted one-half hour before sunrise to one-half hour after sunset Monday through Friday. Travel is permitted until noon on Saturdays if not exceeding 12' wide, 85' long, 13'6" high and must maintain travel speed. No travel on Sundays or major holidays. Superloads, which are **loads over 200,000lbs and over 200ft in length**, will require New York State Police.

### PENNSYLVANIA

Travel is allowed 5 days (weekdays only) for most of the above reference components sunrise to sunset outside urban areas; permits are valid 5 days. Regular Oversize Loads go through the local District (Somerset District 9) permit office and Superloads will go through the Harrisburg Central Permit Office and typically require pre-approvals on Routing. Superloads, which are **loads over 200,000lbs and over 160ft in length**, will require Two Pennsylvania State Police to escort the load along with a full Level 1 Inspection at the Boarder (roughly 1-2 hours). Currently PA State Police only allow two Inspections per day which limits the number of Superloads that can be transported to the Site. Currently All Blades and the Nacelle will fall into a Superload Category.

### STEBEN COUNTY

County will require a Road Usage Agreement prior to the start of the project. In addition, for all loaded Turbine Deliveries they will require the State Permit to be sent to them prior to their approval of the use of County Roads (County Permit). Logisticus forecast this to be a risk item due to the Typical GE Model of multiple carriers to deliver, a process will need to be put in place prior to deliveries to ensure Carriers are submitting correctly and Steuben County is receiving the State Permits.

## Truck Staging

**Identification of Truck Staging Off Site:** Once in New York, Logisticus did not locate any suitable truck staging areas large enough to accommodate multiple loaded trucks. Once in the state, trucks must get to the project site to stage.

## Current Road Conditions

### PRIMARY ROAD - NY 248

Width – Two lane State Highway, approx. 35ft wide

Material – Asphalt in good condition

Risk Level – limited



### PRIMARY ROAD - NY 417

Width – Two lane State Highway, approx. 40ft wide

Material – Asphalt in good condition

Risk Level – grades up to 10%



### PRIMARY ROAD - COUNTY ROAD 61 (NORTH OF NY417)

Width – Two lane Steuben County, approx. 25ft wide

Material – Asphalt in good condition

Risk Level – grades up to 8%, line of sight poor

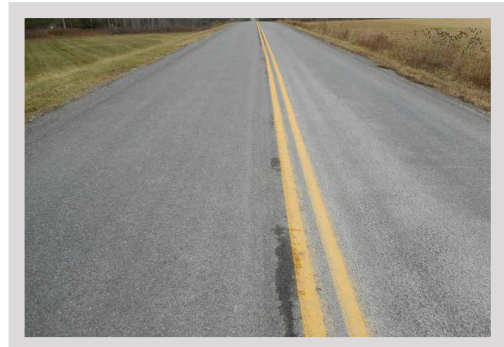


### PRIMARY ROAD - COUNTY ROAD 61 (SOUTH OF NY417)

Width – Two lane Steuben County, approx. 21ft wide

Material – Asphalt in decent condition

Risk Level – grades up to 8%, line of sight poor





## Current Road Conditions continued

### SECONDARY ROAD - PEASE ROAD

Width – Single Lane County Road, approx. 18ft wide

Material – Dirt/Gravel mix

Risk Level – Trees to be trimmed, poor line of sight



### SECONDARY ROAD - KING HILL ROAD (TOWNSHIP LINE)

Width – Single Lane County Road, approx. 22ft wide

Material – Dirt/Gravel mix (seasonal road)

Risk Level – Soft Road and Shoulders



### SECONDARY ROAD - COUNTY ROAD 60

Width – Two lane Steuben County, approx. 21ft wide

Material – Chip seal, very poor condition

Risk Level – grades up to 8%, poor road surface



### SECONDARY ROAD - DRYDEN HALL ROAD

Width – Single Lane County Road, approx. 20ft wide

Material – Dirt/Gravel mix

Risk Level – Soft Road and Shoulders



## Current Road Conditions continued

### SECONDARY ROAD - SIMONS ROAD

Width – Single Lane County Road, approx. 24ft wide

Material – Dirt/Gravel mix

Risk Level – Soft Road and Shoulders



### SECONDARY ROAD - COUNTY ROAD 98 (REXVILLE WILEYVILLE ROAD)

Width – Two lane Steuben County, approx. 22ft wide

Material – Newly Paved Asphalt

Risk Level – 3 Bridges/Structure Issues



### SECONDARY ROAD - DOWNEY STREET

Width – Single Lane County Road, approx. 20ft wide

Material – Compacted Dirt

Risk Level – Soft Road/Shoulders, grades up to 7%



### SECONDARY ROAD - KENNAN ROAD

Width – Single Lane County Road, approx. 18ft wide

Material – Compacted Gravel/Dirt

Risk Level – Soft Road/Shoulders, grades up to 6%



## Current Road Conditions continued

### SECONDARY ROAD - IRISH HILL ROAD

Width – Single Lane County Road, approx. 20ft wide

Material – Compacted Gravel/Dirt

Risk Level – Soft Road/Shoulders



### SECONDARY ROAD - SHAMROCK ROAD

Width – Single Lane County Road, approx. 28ft wide

Material – Compacted Gravel

Risk Level – Soft Road/Shoulders



### SECONDARY ROAD - SANDERS ROAD

Width – Single Lane County Road, approx. 21ft wide

Material – Compacted Gravel/Dirt

Risk Level – Soft Road/Shoulders



## DOT Planned Construction

1. DOT Construction Projects for 2018 to 2019 are not known as of today
2. New York State is currently in a 5-year rapid bridge replacement process, this is expediting bridges on a 20 to 30 year replacement to bring them current.
3. Once a better project timeline is known, another meeting with the DOT will be needed to ensure there are no impacts.

## Road Improvements Off-Site

1. Three off-site improvements were noted as of this assessment:
  1. Intersection of NY417 North and NY36 South in Jasper, turn measured 115ft
    - Tip swing is the large concern at this intersection
    - GPS Location -  $42^{\circ} 7'32.03''N$   $77^{\circ}30'27.34''W$
  2. Intersection of NY36 South and NY417 West in Jasper, turn measured 130ft
    - Inner radius is the main concern
    - GPS Location -  $42^{\circ} 7'5.47''N$   $77^{\circ}31'38.56''W$
  3. Intersection of NY417 and NY248 in Greenwood, turn measured 135ft
    - Tip swing needs to be accounted for
    - GPS Location -  $42^{\circ} 8'36.29''N$   $77^{\circ}38'40.24''W$
2. All off-site road improvements for this assessment were based on the following road transportation specifications:
  - a. Radii minimum – 135ft
    - Tip Swing = 70ft
  - b. Overhead Clearance – >16ft
  - c. Maximum Grade – 10%
  - d. High/Low Spot – Six inches over 50ft
  - e. All Roads Cement/Asphalt – above 95% compaction level

## Road Improvements On-Site

1. Project site has two main entrances:
  - a. Entrance 1 (Northern Turbines)
    - a. New York 417 at County Road 61 (north and south)
    - b. GPS Location -  $42^{\circ} 9'12.10''N$   $77^{\circ}42'49.11''W$
  - b. Entrance 2 (Southern Turbines)
    - a. New York 248 at County Road 98
    - b. GPS Location -  $42^{\circ} 4'49.73''N$   $77^{\circ}40'6.72''W$
  - c. Northern Turbine road improvement locations: (6 total suggested)
    - a. Intersection of NY417 and County Road 61 measured 115ft to the north and 135ft to the south. Only a radius to the north is needed
    - b. Intersection of County Road 61 and Pease Road, measured 100ft - northwest area needs to be modified
    - c. Intersection of County Road 61 and Lane School Road, measured 125ft - southeast



# Road Improvements On-Site continued

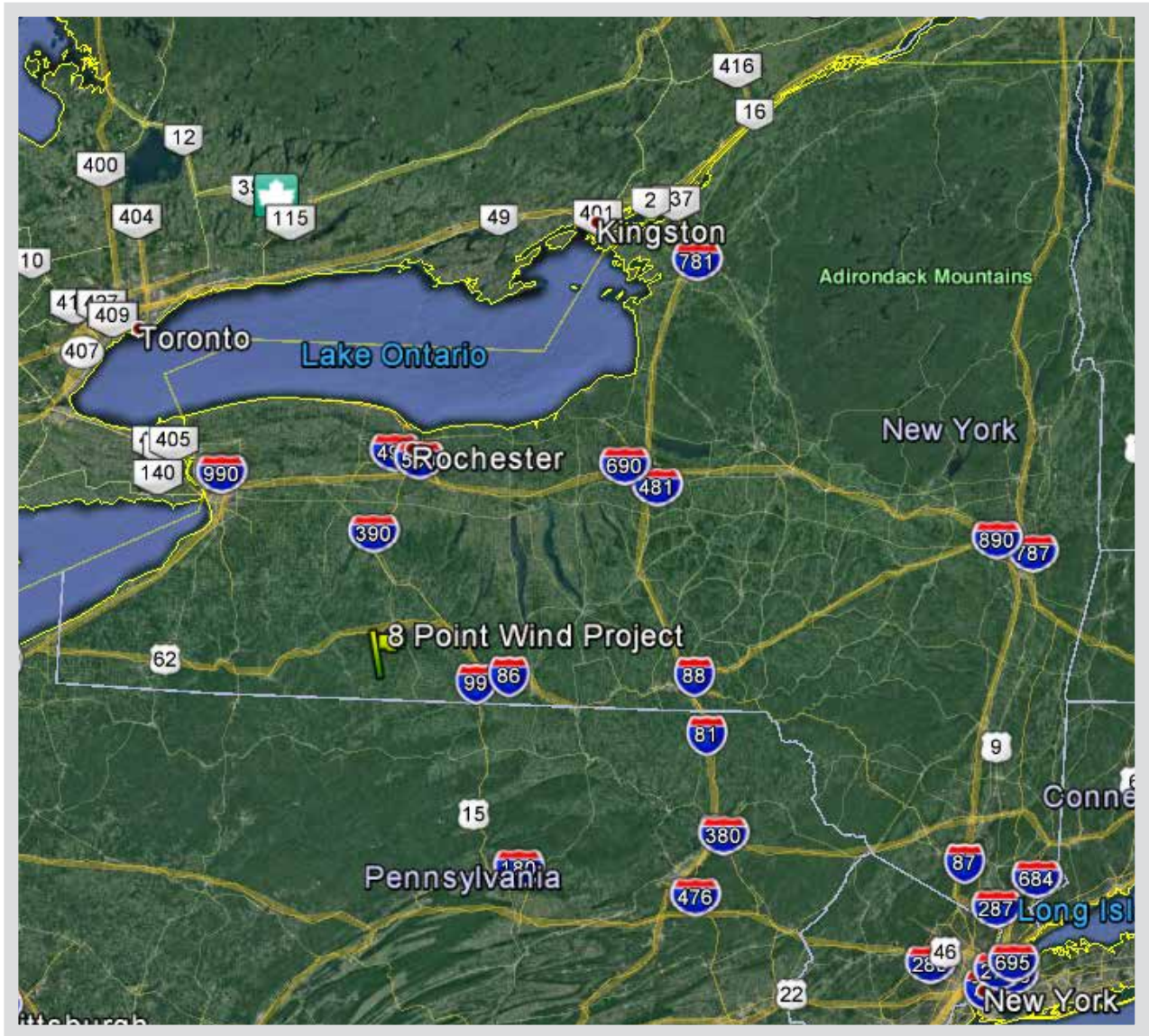
- area needs to be improved (or use of private driveway)
- d. Intersection of Lane School Road and Simons Road, measured 120ft – southwest area needs to be improved
- e. Intersection of County Road 61 and Flynn Road, measured 110ft – northeast area need to be improved
- f. Intersection of County Road 60 and King Hill Road, measured 110ft, northeast and northwest areas needs to be modified
- d. Southern Turbine Road Improvement Locations: (3 total suggested)
  - a. Intersection of NY248 and County Road 98, measured 115ft, southeast area needs to be modified
  - b. Intersection of Irish Hill Road and Keenan Road, measured 110ft – northeast and southeast area need to be modified
  - c. Intersection of County Road 98 and Saunders Road, measured 100ft – northeast area need to be modified.
- e. All site roads leading from the major County roads will need be built and/or modified when construction of the site begins.
  - a. Actual string roads to the turbine sites were not known at the time of this assessment.
- f. Steuben County has voiced concerns with three structures along CR98 south of NY248 (all are timber deck bridges with asphalt or concrete tops).
  - a. County Road 98 Bridge Locations:
    - 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



## Summary

1. Site Status – Planning
2. Overall Risk for delivery of turbine components – **Medium Risk** (**High Risk** for 67.2m Blades)
3. Breakdown of improvements required on truck routes:
  - a. Off-site improvements on State Roads:
    - i. Two locations near Jasper, NY (mainly for Tip Swing)
    - ii. One location near Greenwood, NY (Tip Swing Only)
  - b. Onsite Improvements
    - i. Project site roads will need to be built or modified
    - ii. Three bridges on site need to have a third-party review done
    - iii. Roughly nine on-site radius improvement needed (final on-site routing could change the total number)
    - iv. Numerous trees will need to be trimmed
    - v. Tip swing should be taken into account for all turns to ensure no contact with the blade
    - vi. Site construction has not yet begun
4. Permit risk is **Medium/High** for Steuben County) with all options. Approvals will be needed from the following jurisdictions:
  - a. New York DOT
  - b. New York State Police
  - c. Steuben County Permit Risk is high due to process, however Logisticus feels we can lower the risk to low if a process is adopted.
    - d. No posted bridges on any of the proposed routes of this assessment on State Roads.**
5. Logisticus recommends that once all site work is complete, prior to deliveries, to perform a follow up survey to ensure site is ready to receive components.
6. Logisticus has the ability to facilitate communications with State DOT's and approved engineering company, if the need arises.
7. Logisticus has vetted all above options with DOT stakeholders and no issues were noted as of this assessment
8. On County Road g8 (in Rexville) there are three bridges on Steuben County roads which need a third-party review performed.

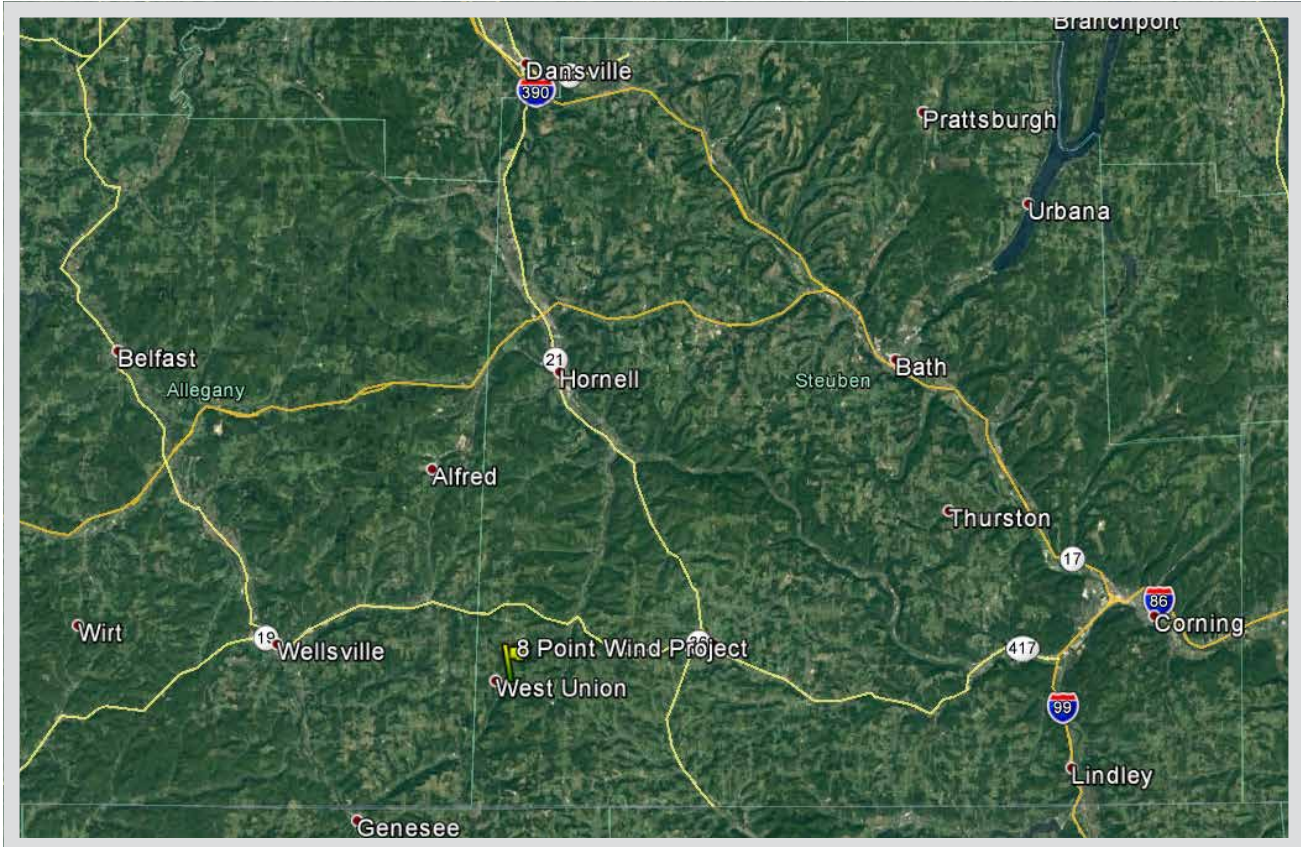
# Maps



STATE LEVEL MAP



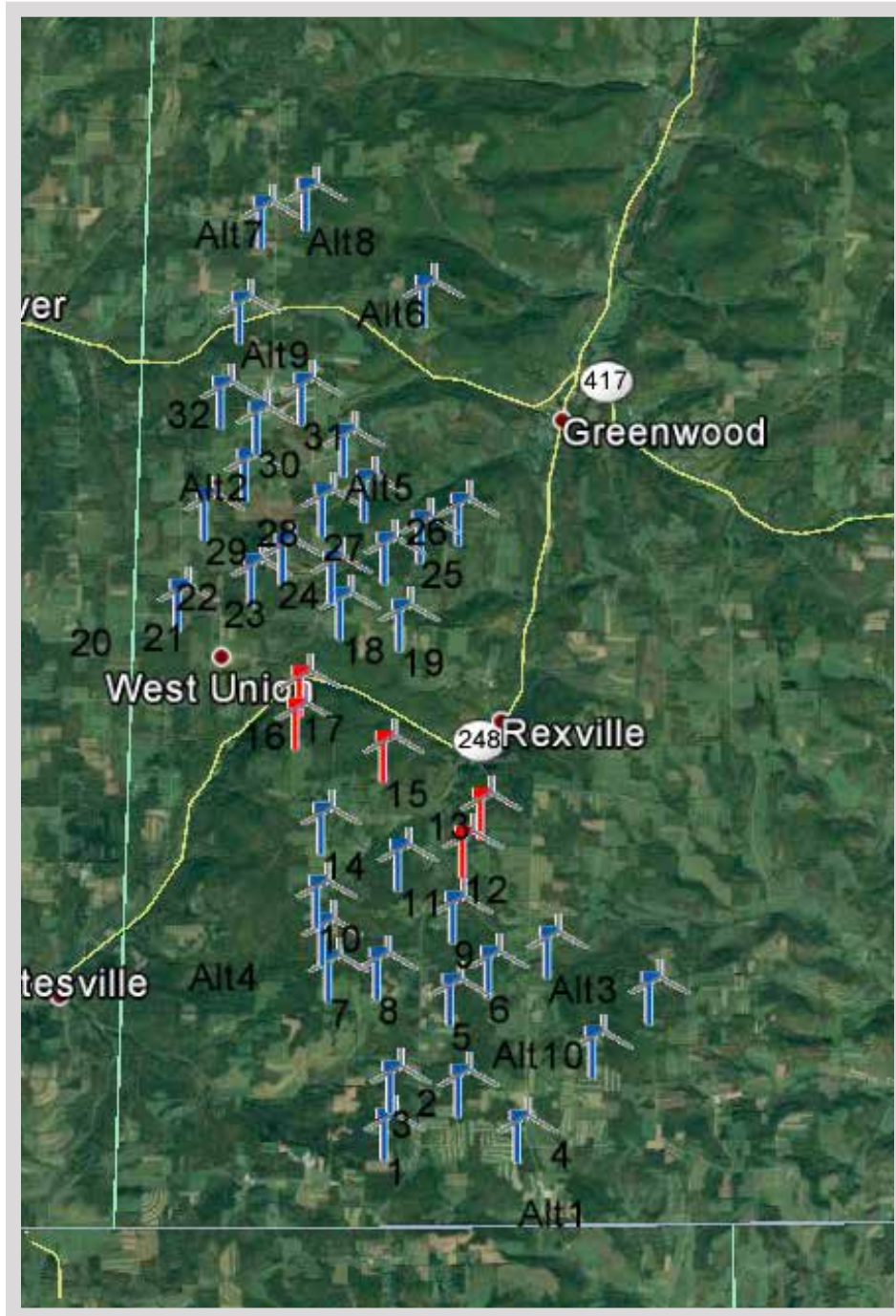
Maps continued



COUNTY LEVEL MAP

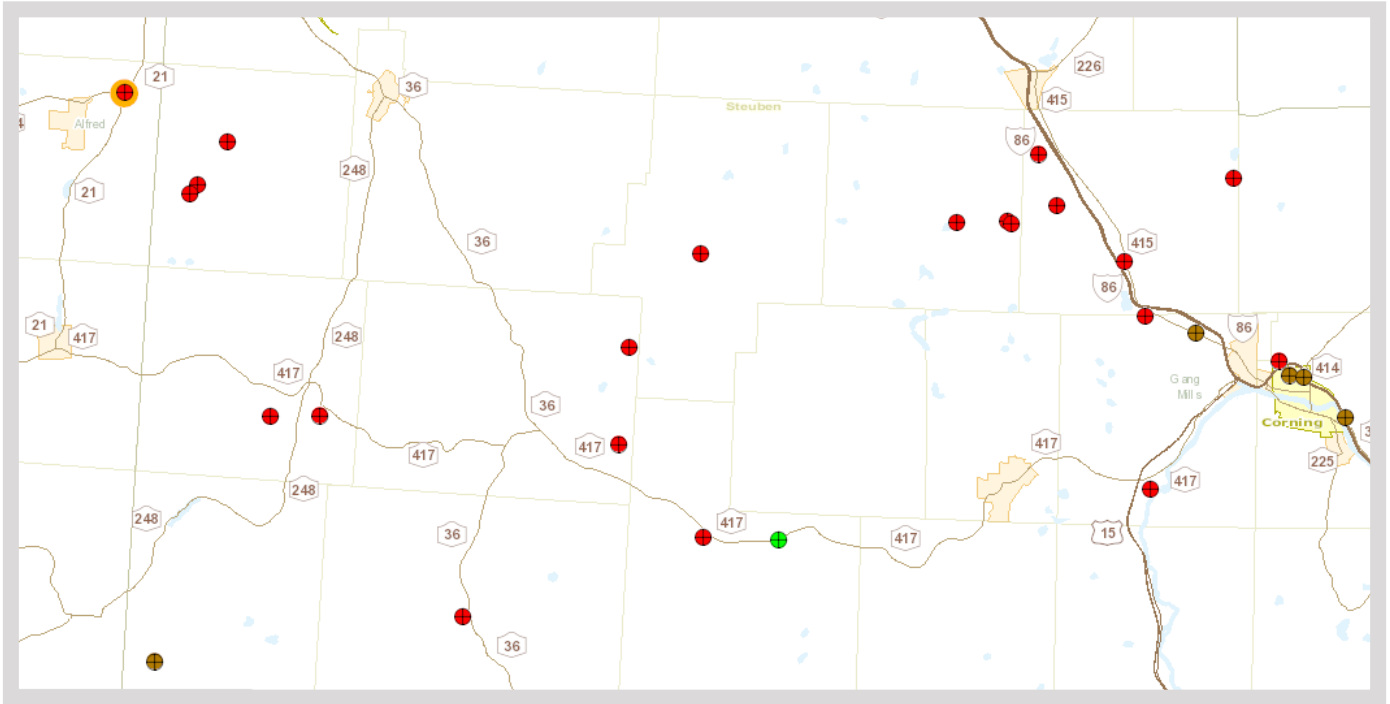


Maps continued








**SITE MAP**

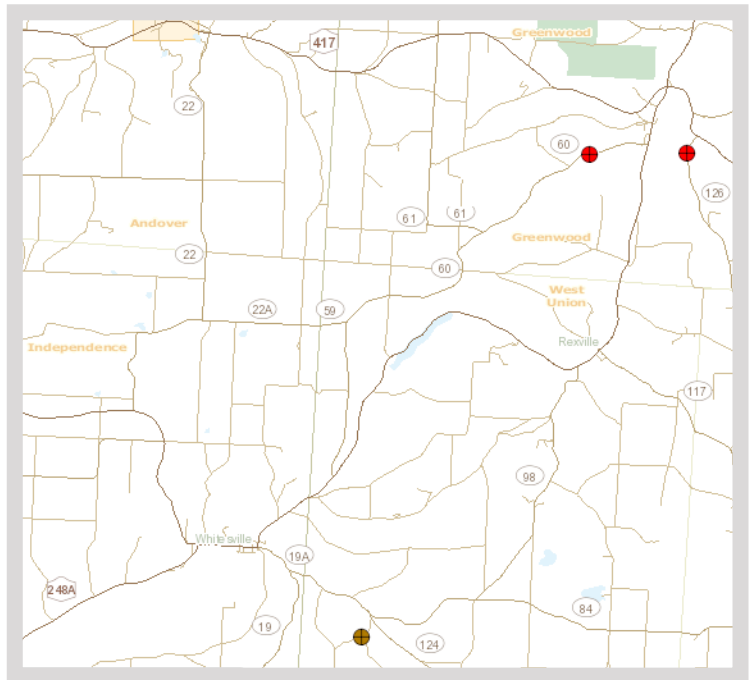
Maps continued



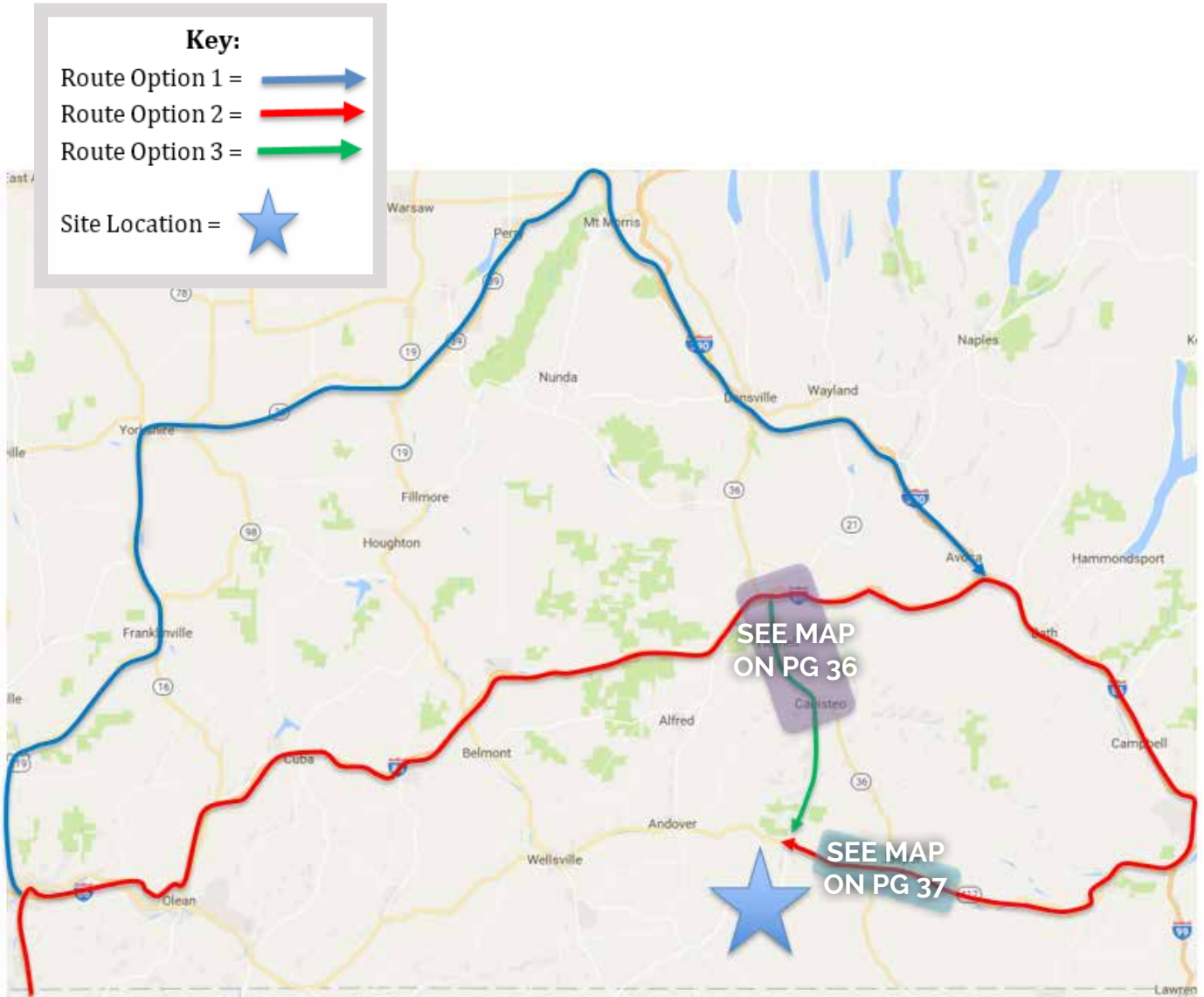
**NEW YORK STATE  
POSTED BRIDGE MAP  
-NO IMPACTS**

**Layers**

-  State Owned R-Posted Waivered Bridges\*
-  State Owned R-Posted Bridges, Non-Waivered
-  Non-State Owned R-Posted Bridges
-  Load Posted Bridges
-  Other Posting Including Closed

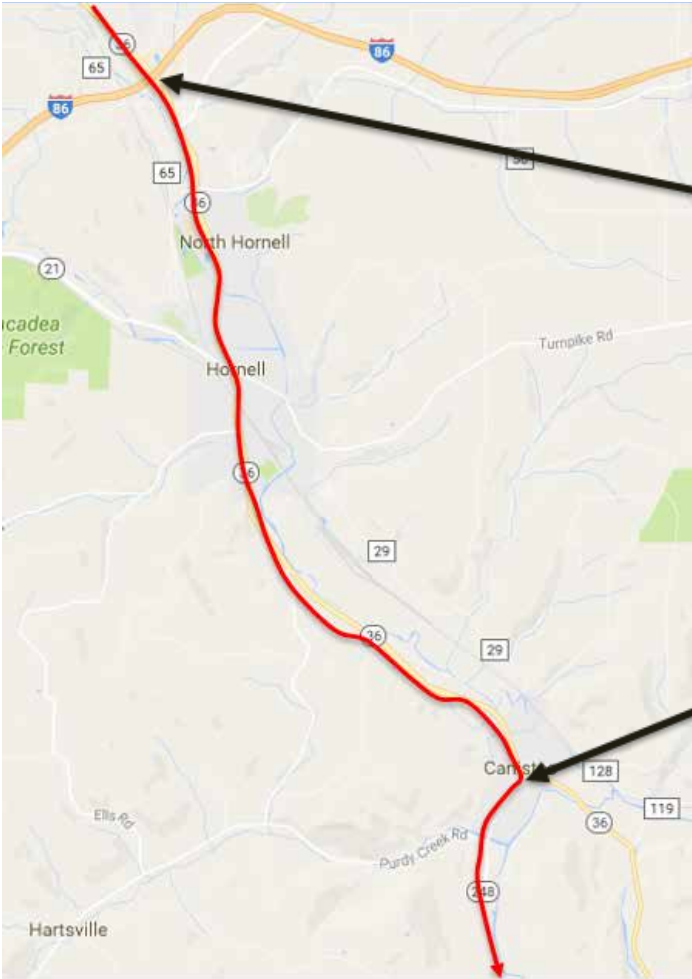


# Detailed Route Pictures



## HIGH LEVEL TRUCK ROUTES

Detailed Route Pictures continued



NY36 under Int86, measured 14'7 at the lowest



Intersection of NY36 and NY248 in Canisteo measured 135ft, however has limitation. 67.2m Blade CANNOT travel through here.

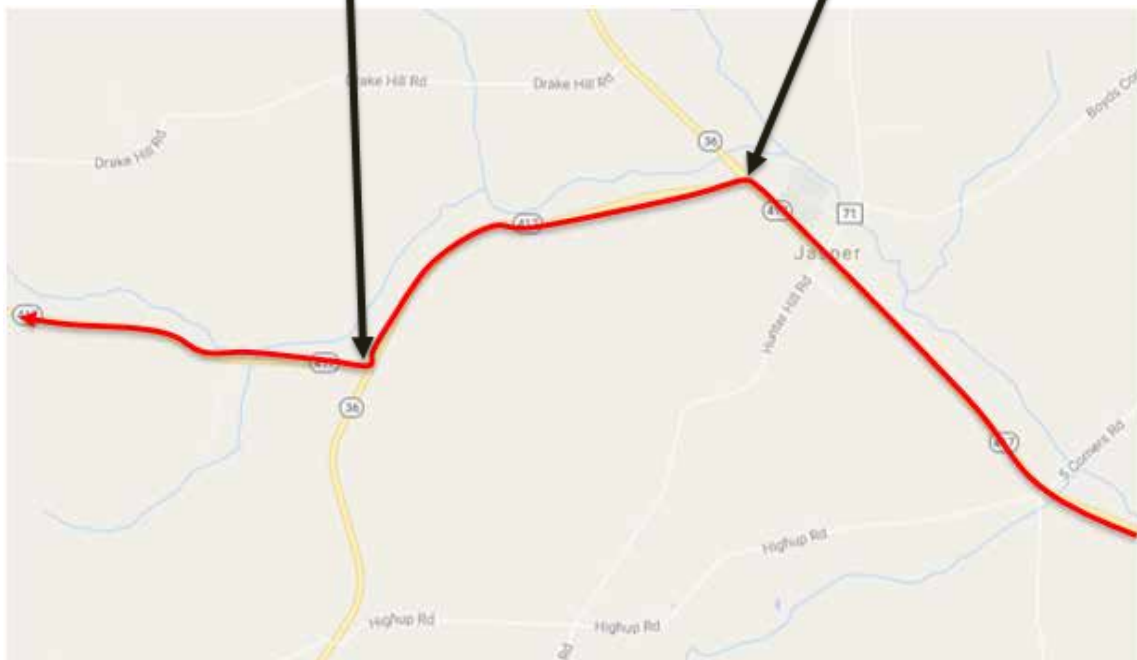
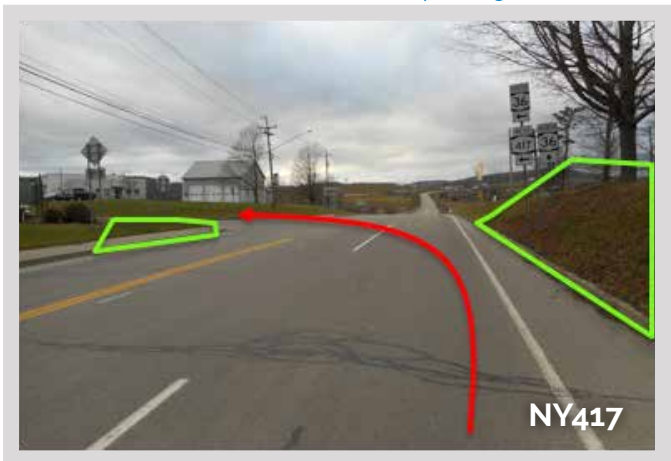


# Detailed Route Pictures continued

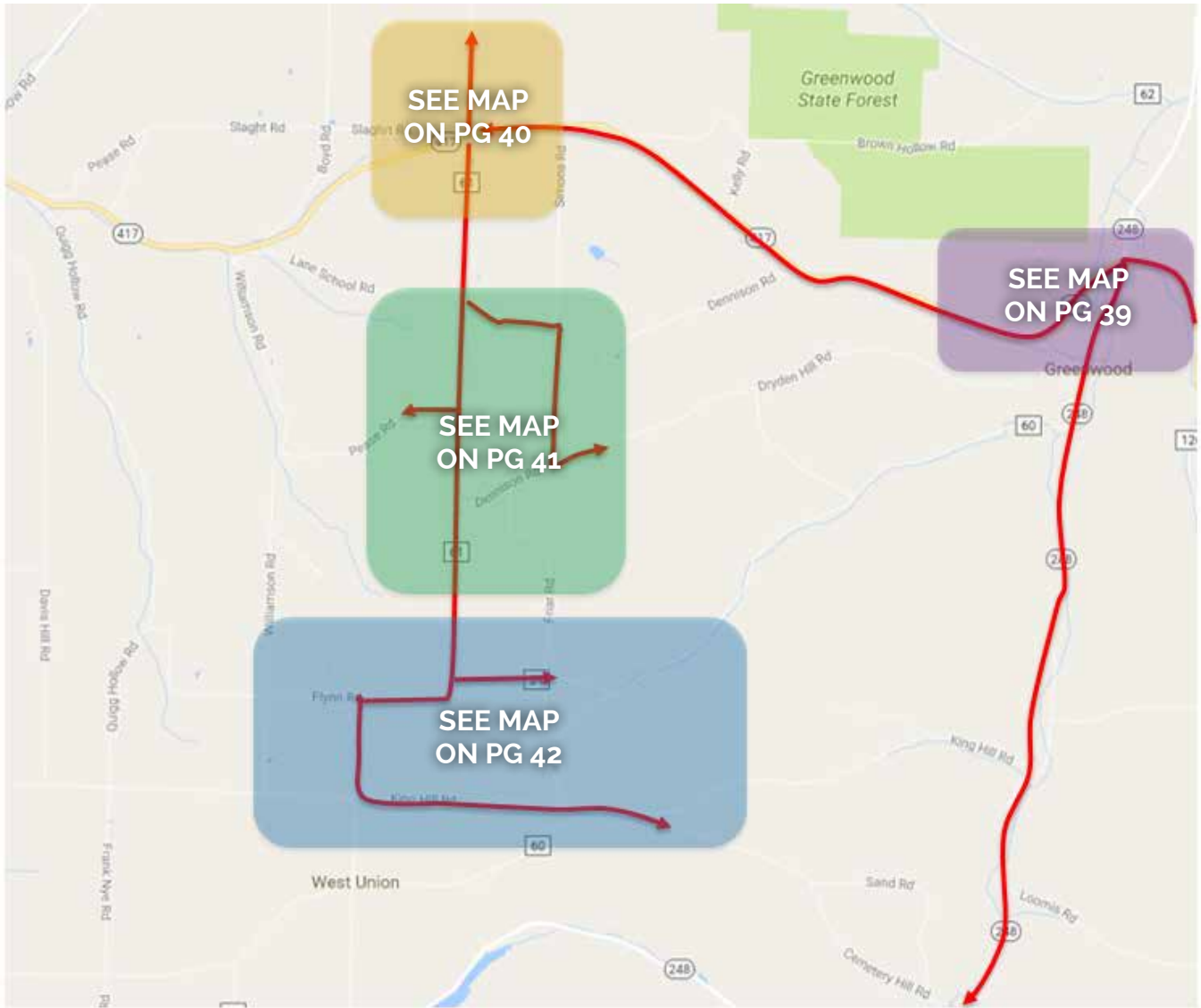
Intersection of NY36 and NY417 in Jasper, measured 130feet. Turn was slightly short and need signage removed in north corner.



Intersection of NY417 and NY417 in Jasper, measured 115feet. Inside radius need to be widened and outside corner for Tip Swing



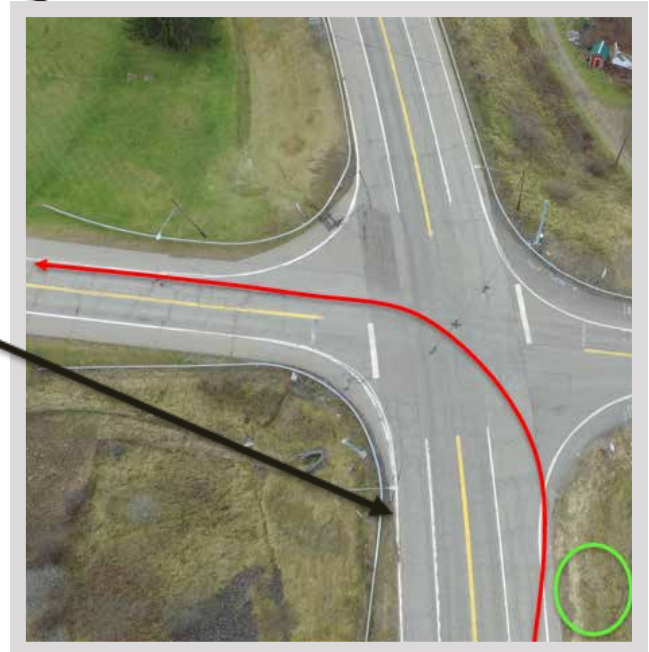
# Detailed Route Pictures continued



**NORTHERN TURBINE SUGGESTED ROUTING**

Detailed Route Pictures continued

Split in Greenwood of NY417 and NY248.



Intersection of NY417 and NY248, measured 135ft  
- signage will need to be removed

# Detailed Route Pictures continued

Intersection of NY417 and CR61, measured 135ft to the south and 115ft to the north. Northeast area needs to be modified along with removal of signage. Poor line of sight to the west on NY417 – traffic control needed

Intersection of NY417 and CR61Northeast area needs to be modified along with removal of signage. Poor line of sight to the west on NY417 – traffic control needed



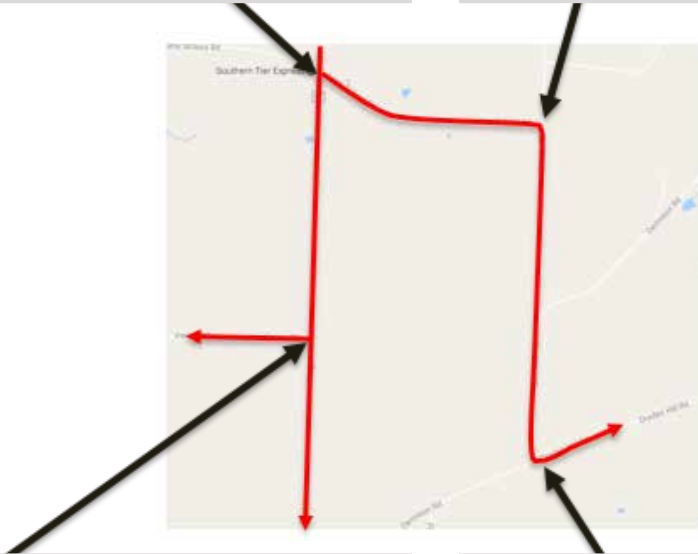


# Detailed Route Pictures continued

Intersection of CR61 and Lane School Road measured 125ft, use of private property is needed from owner.



Intersection of Lane School Road and Simmons Road measured 120ft, southwest corner needs to be modified.



Intersection of CR61 and Pease Rd measured 100ft, Logisticus recommends a cut through to avoid the utility pole.



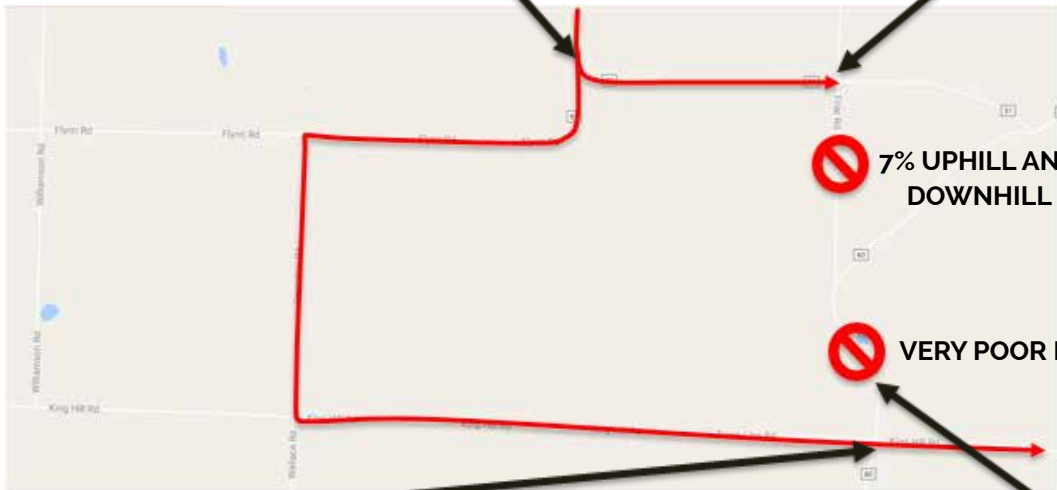
Intersection of Simmons Road and Dryden Hill Road measured 95ft, northeast corner needs to be modified.

Detailed Route Pictures continued

Bend in County Road 61, no issues



Intersection of County Road 31 and Friar Road, measured 90ft

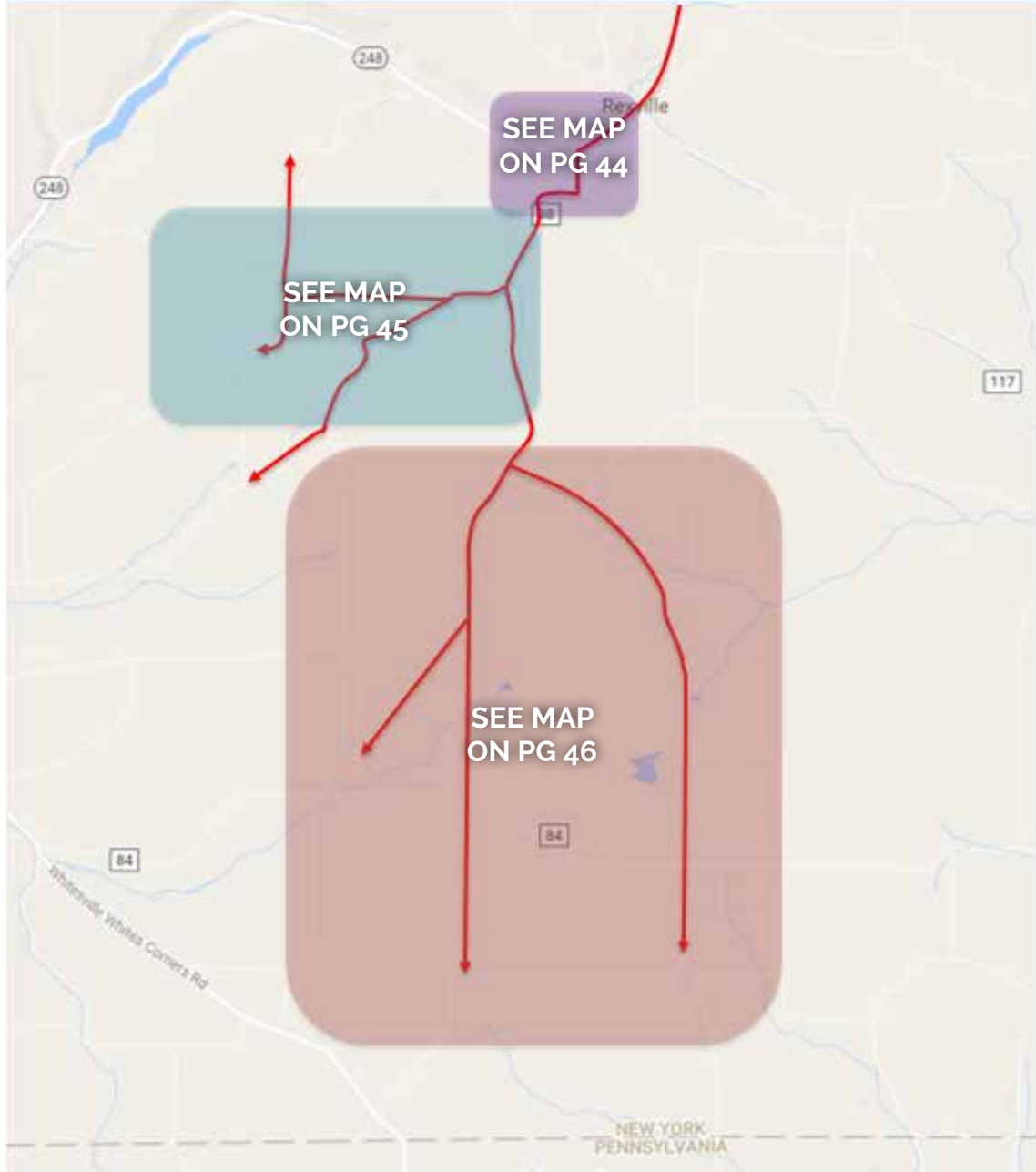


Intersection of King Hill Road and CR60, Logisticus recommends avoiding CR60 at all cost.



County Road 60, 7% uphill grade and major washout issues. Logisticus does NOT recommend to use this road

# Detailed Route Pictures continued



**SOUTHERN TURBINE SUGGESTED ROUTING**

# Detailed Route Pictures continued

Intersection of NY248 and CR98, measured 120ft – southeast corner needs to be modified with signage removed



County Road 98 – Wide Bend, no issues



Intersection of NY248 and CR98, measured 120ft



# Detailed Route Pictures continued

Bridge 1 of 3 on County Road 98 – Tiber Deck



Bridge 1 of 3 on County Road 98 – needs 3rd party review



Intersection of Irish Hill Rd and Keenan Rd measured 110ft, both northeast and southeast areas need to be modified

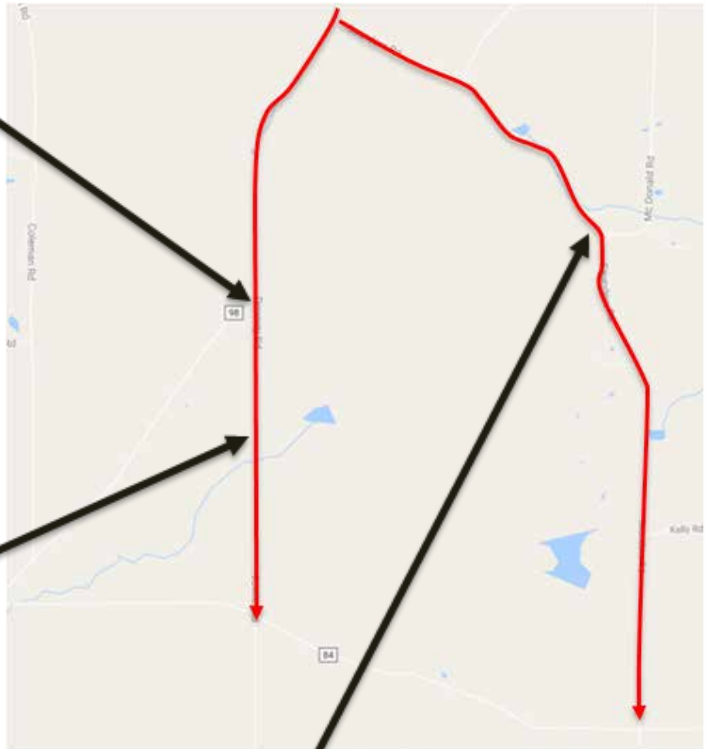


Intersection of County Road 98 and Irish Hill road, measured 170ft – no issues



# Detailed Route Pictures continued

Intersection of CR98 and Downey Road, no turn  
CR98 becomes Downey Road. No concern with  
the transition as of this Assessment



Downey Road, 7% grades



Sauders Road, windy road with some trees which  
will need to be trimmed.

**DISCLAIMER:** This document is for reference purposes only. All conditions stated within this survey will need to be reverified by transport company before execution of shipment along route described herein. Any road, bridge and/or failure along route that creates damage or delay cost are the responsibility of the shipper. All conditions sited herein are subject to change by controlling agent.

**This document is not meant to replace the trucking companies route survey in any way.** A secondary audit should be completed 30 days before actual transport to identify any new risk.

**Risk is a reality. Let us help you manage it.**