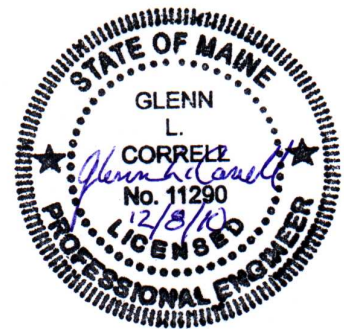


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Transportation Route Assessment Report Bowers Mountain Wind Project

Prepared for:
First Wind, LLC

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#75110E

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Overview

The James W. Sewall Company (Sewall) has completed a Transportation Route Assessment for the overland transport of the Wind Turbine Generator (WTG) components for the Bowers Mountain Wind Project located in Carroll Plantation and Kossuth Township, Maine. At this time, the Bowers Wind project is to include up to 27 turbines, with 19 being located in Penobscot County (Carroll Plantation) and 8 turbines sited for Washington County (Kossuth Township).

Project Background

This assessment assumes that WTG components will originate from the port at Searsport, Maine and be transported overland utilizing the existing roadway network as the primary transportation route. Component delivery utilizing the port at Eastport, Maine was also analyzed as an alternative transportation route.

Typically, fourteen trucks are required to deliver turbine components for each Wind Turbine Generator. Four of these trucks are conventional over-the-road semi-trucks. The remainder of the transport vehicles includes four multi-axle Schnabel type trailers, three multi-axle low bed trailers and three long flat bed trailers. Depending on the specific trailers utilized, the longest transport vehicle may approach 209 feet in total length.

A previously completed Route Study for the Oakfield Wind Project has identified a WTG component delivery route from Searsport to Bangor and then north to Lincoln along Interstate 95. Our Study builds on the Oakfield Study and reviews the potential route from the I-95 exit (Exit 227) in Lincoln to the site access roads off of Route 6. The previously assessed transportation route from Searsport to I-95 in Lincoln is depicted in Figures 1 and 2.

Our field inspections were conducted on August 13, September 17, and November 19, 2010. Current plans call for the site to be accessed via the Baskahegan entrance, a proposed connector to the Dipper Pond Road, and the eastern end of the Dill Hill Loop Road. The Dipper Pond Road and the Brown Road have also been reviewed as alternate access points.

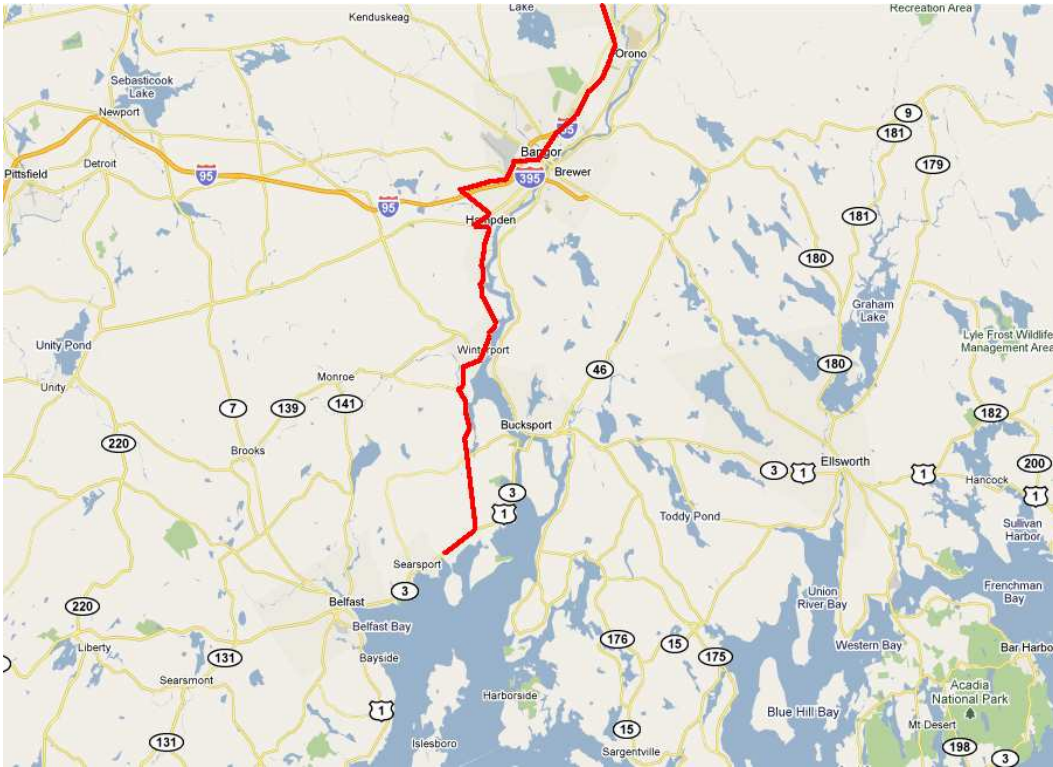


Figure 1 - Searsport to Bangor (Oakfield Wind Project)
Image from Google Maps

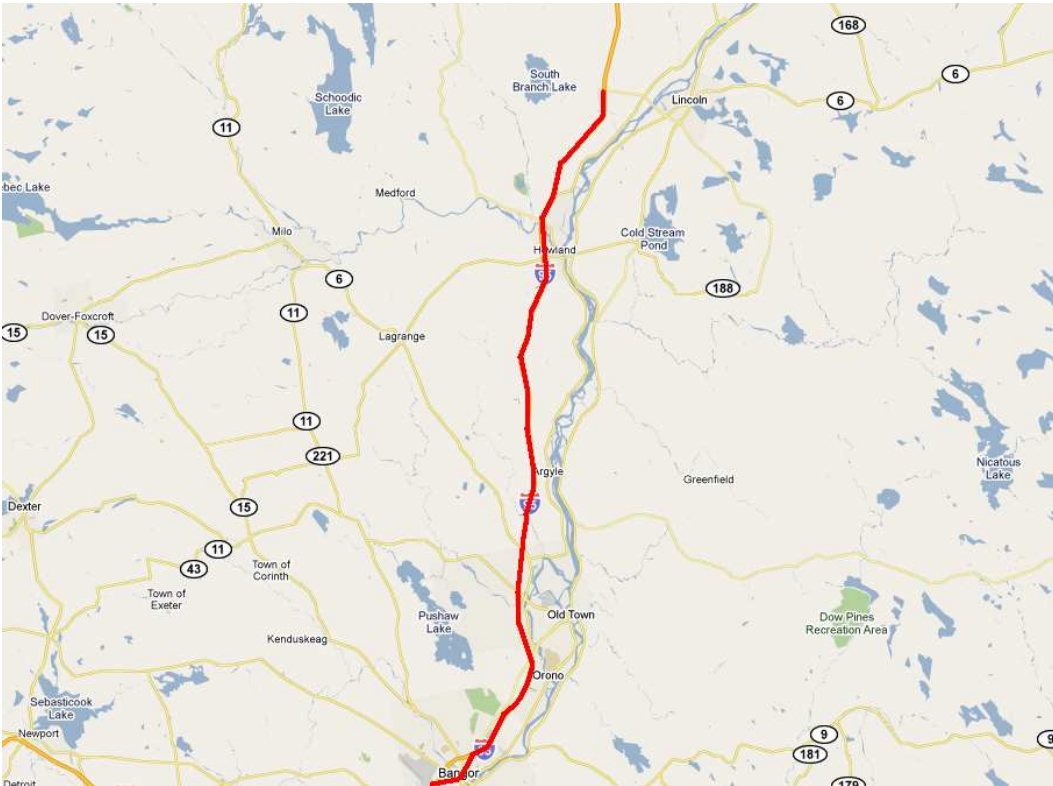


Figure 2 - Bangor to Lincoln (Oakfield Wind Project)
Image from Google Maps

Assumptions and Limitations

While we understand that the final turbine generator manufacturer selection has not been made yet, we have used the transportation criteria for the Siemens SWT - 2.3-101 WTG option for our analysis. These criteria were selected as the Siemens turbine represents the largest and heaviest of the turbine options being considered, and therefore represents the most-restrictive transportation criteria. Sewall's visual inspection of the transportation route looked at the geometrics of the roadways and included the horizontal and vertical alignments, overhead clearances, and weight restrictions. This assessment is preliminary, and field survey and/or as-built plans of the areas of concern will be required to determine the viability of the route and the extent of any modifications that would be required.

Transportation Route

The reviewed primary transportation route of approximately 35 miles is summarized as follows:

- **I-95 to Route 155 (Enfield Road)** - From Interstate 95 northbound take Exit 227 onto Penobscot Valley Avenue (I-95 Connector Road) traveling southeast to the intersection with Route 155 (Enfield Road).
- **Enfield Road (Route 155) to Route 6** - Take left on Enfield Road traveling northbound to center of Lincoln where Route 155 merges with Routes 2 and 6 and becomes Main Street.
- **Route 6 to Project Site** - From Main Street in Lincoln take a right onto Route 6 and continue easterly through Lee and Springfield to the site access roads. The transportation route from I-95 to the site access roads is shown below in Figure 3.

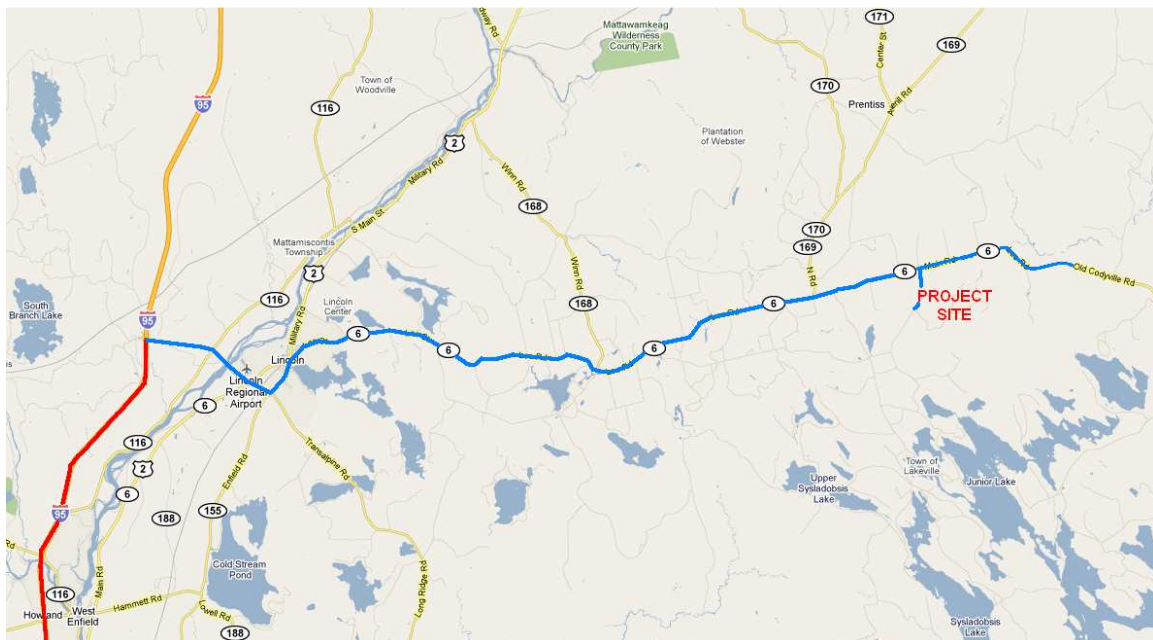


Figure 3 - Lincoln to Project Site (Blue Route)

Image from Google Maps

The following discussion further details the issues, constraints, and possible improvements that may need to be considered along the proposed transportation route.

I-95 to Route 155 (Enfield Road)

The northbound exit at Lincoln (Exit 227) appears to be adequate to allow the delivery transports to pass. Field survey or review of as-built plans will need to be conducted to determine if a yield sign and light pole located on the inside of the curve would pose an obstacle. If the pole and sign do create an obstacle, the sign could be modified to be removable during transport and the light pole can be temporarily removed or relocated.



Northbound Off-ramp, Exit 227 – Lincoln, Maine

The Penobscot Valley Avenue/I-95 Connector Road has two twelve-foot travel lanes with eight-foot paved shoulders. The posted speed limit is 55 mph. This segment poses no obstacles to the vehicles other than elevation of the overhead wires which will need to be checked.

At the intersection of the Penobscot Valley Avenue and Routes 2 and 6, the delivery vehicles will travel straight through the intersection. The crown of Route 2 at the intersection will require field survey to determine if the grade difference through the intersection exceeds the vertical clearance for the Siemens turbine transport vehicles. Additionally, overhead wires and traffic signal heads will require checking to determine if they present overhead obstacles. It appears that the signal heads can be raised on their existing bracket supports to provide additional clearance height.



Intersection Penobscot Valley Avenue & Routes 2 & 6

East of Routes 2 and 6, the Penobscot Valley Avenue provides two twelve-foot travel lanes with four- to six-foot gravel shoulders. The posted speed limit is 45 mph. Midway between Routes 2 & 6 and the Enfield Road, the railroad crossing on the Penobscot Valley Avenue should be reviewed to determine if the rise in the road at the tracks exceeds the vertical clearance required of the Siemens turbine transport vehicles. Should the roadway grades at this location present a clearance issue, minor shimming of Penobscot Valley Avenue could be completed to the east and west of the tracks to reduce the grade differences. Overhead residential service connections and electrical crossings will also need to be evaluated for appropriate clearances along this roadway.



Railroad tracks on Penobscot Valley Avenue

Enfield Road (Route 155) to Route 6

At the intersection of the Penobscot Valley Avenue and the Enfield Road (Route 155), the WTG delivery vehicles will turn 90 degrees to the left (north-easterly). This intersection will require minor modifications to allow the transports to pass. The transports can use the right shoulders on Penobscot Valley Avenue and the Enfield Road to avoid a utility pole and guy located on the inside of the corner. These shoulders would need to be modified to handle the weight. The northerly corner of this intersection, where the sidewalk is located, will likely need to be modified to allow for passage of the transports. The sidewalk would need to be replaced after the shipping of the components is finished. The crown on the Enfield Road may be an obstacle for the vertical clearance of the Siemens turbine transport vehicles. This intersection will need field survey to address these various issues.



Intersection Penobscot Valley Avenue & Route 115



Guy on inside corner at Penobscot Valley Avenue & Route 115

The Enfield Road (also known as High Street) travels northerly into downtown Lincoln. This road has two eleven-foot lanes with six-foot paved shoulders. The posted speed limit is 30 mph. Further north, the Enfield Road narrows to two eleven-foot lanes with two and one-half foot paved shoulders. There is a crest vertical curve north of hydrant #41 on this road that warrants further review for vertical clearance. A narrow bridge just north of Taylor Street Extension has 25 feet of pavement width with a single five-foot sidewalk on the easterly side. There is a minimal height difference between the roadway and the sidewalk so the transport vehicles may be able to utilize the sidewalk if necessary.



Narrow Bridge on Enfield Road (High Street), No Posted Restriction

At the intersection of the Enfield Road/High Street and Routes 2 and 6, the Enfield Road becomes Main Street in Lincoln. Signal heads at this intersection need to be checked for overhead clearance. Raising these signal heads slightly if necessary appears possible with adjustments to the signal bracket mounts.



Intersection of Enfield Road & Routes 2 & 6

Main Street in the downtown area does not appear to have any issues with overhead wire clearances. The existing on-street parking however, may be an issue to be discussed with the Town of Lincoln. It may be desirable to restrict on street parking (at least one side of road) along Main Street during transport operations.



Main Street, Lincoln, Maine

Where Route 6 turns off to the right (north-easterly), the transport vehicles may need to utilize the opposing lane on Main Street to avoid the poles on the inside (right) side of the curve. If the opposite lane is needed, this issue can be addressed as part of the traffic control plan.



Intersection Route 2 & Route 6, Lincoln, Maine

Route 6 in Lincoln proper has two twelve-foot travel lanes with a paved five-foot shoulder on the left and a paved seven-foot shoulder on the right. Beyond the town proper, Route 6 has two twelve-foot travel lanes and six-foot paved shoulders. The posted speed is 50 mph.

Route 6 to Project Site (Baskahegan Entrance)

In Springfield, the posted speed limit is 35 mph. At the end of the 35 mph section, Route 6 climbs a 0.6 mile long steep hill with a grade of approximately 10%. Although this hill has a climbing lane, the transport vehicles will have a difficult climb up the hill. The posted speed limit beyond Springfield is 50 mph. Route 6 continues with two twelve-foot travel lanes and six-foot paved shoulders to the Penobscot and Washington County line. Immediately east of the county line, Route 6 narrows to two twelve-foot travel lanes with two-foot paved shoulders. The posted speed remains at 50 mph. There were no outstanding issues with Route 6. The overhead clearances of utility lines over the road will need to be checked prior to starting the transportation of the components.

The proposed Baskahegan entrance is approximately 330 feet east of the Washington-Penobscot County line. The entrance will be a new road constructed over a recently acquired easement to connect with the Dipper Pond Road. The sight distances are in excess of 650 feet, which is in excess of the recommended sight distance of 425 feet for 50 mph. A secondary entrance, 1.85 miles east of the Washington-Penobscot county line, will access the project at the Dill Hill Loop Road (East end). The intersection sight distances at the Dill Hill Loop Road entrance were measured and found to be in excess of 600 feet.



Site Entrance – Dill Hill Loop Road, Kossuth, ME

Alternate Access – Dipper Pond & Brown Roads

The Dipper Pond Road is a private road. The available intersection sight distance at the Dipper Pond entrance was determined to be greater than 600 feet.



Alternate Entrance – Dipper Pond Road, Carroll Plantation, ME

The Brown Road is an 18-foot wide gravel road with a length of 1.7 miles to the Moose Road. On Route 6, to the east of the Brown Road, there is a combination of crest-sag-crest vertical curves. The sag (at the drive of the white house shown in the picture below) may impinge on the sight distance and may require slight grade modifications to the highway to obtain appropriate intersection sight distance. On Brown Road, a crest vertical curve will need to be examined for clearance issues. Utility wires and branches will need to be checked for overhead clearances.



Intersection Brown Road & Route 6, Carroll Plantation, ME



Sag on Route 6 East of the Brown Road, Carroll Plantation, ME



Alternate Site Entrance – Moose Road, Carroll Plantation, ME

Alternative Transportation Route - Eastport to Project Site (Baskahegan Entrance)

As an alternative to the primary transportation route from Searsport, turbine components could also be shipped to Eastport for unloading and delivery to the project site via Route 1 and Route 6. The Eastport Port Authority would offload the components and transport them to their “point of rest” at the Eastport Municipal Airport. There is a sizable secure area at the airport for this purpose. If Eastport were to be the port of entry, various issues would need to be addressed. This portion of our study focuses on transporting the components from the “point of rest” to the project’s Baskahegan entrance.

The route to the Bowers Mountain Wind Project would follow the Airport Road and turn left onto Route 190 heading northeast. At the intersection of Route 190 and US Route 1, the route would turn right to head north towards Calais. In Calais, the route would utilize South Street (a designated truck route) and then turn left back onto US Route 1 thus avoiding the downtown section of Calais. The route would turn left off of US Route 1 onto Route 6 in Topsfield and proceed westerly to the Baskahegan entrance. This route is depicted in Figure 4 below.

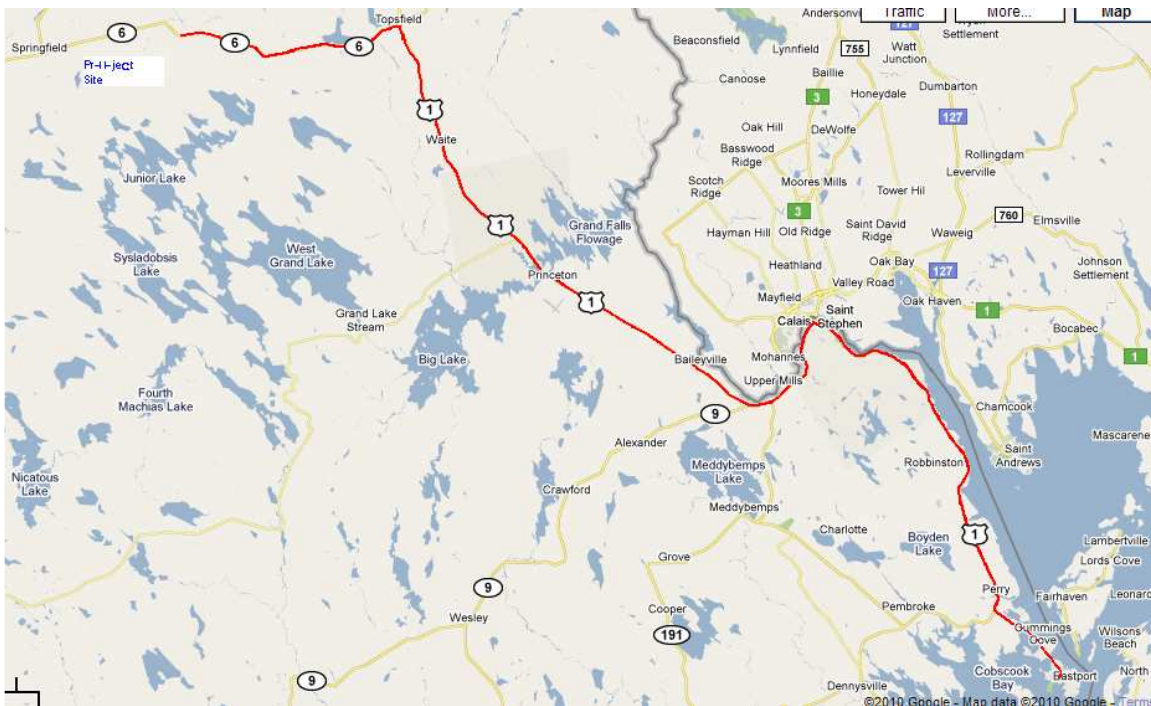


Figure 4 - Eastport to the Project Site (Red Route)
Image from Google Maps

The following discussion further details the issues, constraints, and possible improvements that may need to be considered along the alternate transportation route.

Eastport Airport to Calais

At the Airport Road and State Route 190 intersection, there is a 'lip' where the Airport Road meets Route 190. Just to the left (west) of the Airport Road, there is space between two utility poles through which the components would be able to pass. The Eastport Port Authority has used this space between the poles to ship out turbine blades for other wind projects. It further appears that a minimal bit of regrading in this space would eliminate the 'lip'. Survey would be required to ascertain that all components (not just the blades) can pass through this space and design would have to be completed to determine the needed grades and gravel depth.



Intersection Airport Road & Route 190 - Eastport, Maine

The speed limit on Route 190 varies from 40 mph at the Airport Road to 50 mph with a slower section of 35 mph in Pleasant Point. Route 190 has a width of 28 feet comprised of two twelve-foot lanes with two-foot shoulders at Airport Road. West of the Airport Road, Route 190 widens to typically a 40-foot width, two twelve-foot lanes with eight-foot shoulders.

The intersection of Route 190 and US Route 1 in Perry has 37 feet of pavement on Route 190 and 44 feet on Route 1. The intersection creates a sharp crest vertical curve. The vertical curve could be by-passed if permission to use the corner property's drive to the right of Route 190 could be obtained from the Passamaquoddy Tribe in Pleasant Point. The building on the corner is currently vacant. Survey will be needed to verify that trucks will be able to make the turn.



Intersection Routes 190 & 1 - Perry, Maine

The speed limit on US Route 1 is typically 50 mph and slower in villages along the way to Calais. The terrain is gentle to rolling. The typical pavement width is two twelve-foot lanes with six foot shoulders for a total of 36 feet.

Calais to the Project Entrance

In Calais, the proposed route turns left from US Route 1 onto South Street. South Street is a designated truck route for the mill in Baileyville (Woodland); the inside radius has been widened to accommodate trucks turning from South Street onto Route 1 heading south. Since the proposed route is traveling in the opposite direction of the above trucks, the project vehicles will be able to use the widened pavement (more than 65 feet) to make the turn. Survey will be needed to verify that the transport trucks can make the turn and to determine if trimming of branches is needed on the easterly side of Route 1.



Intersection Route 1 & South Street – Calais, Maine

At the other end of South Street where it meets with Route 1 again, the transport vehicles would need to use the opposing lane to avoid trying to turn around the median island. The tether wire for the signals at South Street and US Route 1 provides over 18 feet of clearance where the transports would pass underneath. This intersection needs no modification to allow the transports to pass through.



Intersection South Street & Route 1 – Calais, Maine

The round-a-bout at the intersection of Route 1 and International Avenue, which leads to the international bridge to New Brunswick, Canada, will likely require some modifications. Temporary removal of some of the vertical granite, regrading of the center island, and relocating a directional sign will likely be required to allow the vehicles to pass through. Once the components are delivered, the center island would need to be restored. As-built plans and/or survey will be needed to ascertain the limit of needed work. MDOT approval will also be required.



Round-a-bout Route 1 & International Ave. – Calais, Maine

The intersection of Routes 1 and 6 in Topsfield has a median on Route 6 that the transports should be able to travel over. Signs in the median will need to be made removable. A light pole on the inside corner may need to temporary be relocated. Survey will be needed to check that the vehicles can utilize this intersection. Any damage to the median would have to be repaired once the components are delivered.



Intersection Routes 1 & 6 – Topsfield, Maine

Route 6 typically has a paved width of two twelve-foot travel lanes with two-foot shoulders from Topsfield to the Baskahegan entrance. The terrain is rolling while the speed limit is 50 mph. The Baskahegan and Dill Hill Loop Road entrances were discussed previously.

Coordination with MaineDOT

Sewall reviewed the proposed transportation routes with MaineDOT Regional 4 Office in Bangor (Lincoln and Perry to Indian Township) and Regional 5 Office in Presque Isle (Lee to Waite). Region 4 reported possible work on Route 1 in Baring and in Perry in 2011 to 2013 – work plans are in the process of being finalized. The Region 4 office indicated a willingness to coordinate the construction projects with the transportation of the components. Region 5 also reported possible work on Route 1 in Waite for the 2011 to 2013 construction seasons. Both regions indicated that the work would be surface pavement work and not full reconstruction.

Summary of Findings

Based on our field review, we believe that both of the discussed transport routes are viable routes for the transport of the wind turbine generator components for the Bowers Mountain Wind Project. We anticipate that only minor modifications to a few of the existing intersections along the route will be necessary to safely deliver the oversized components to the site. Any improvements or modifications to state owned roadways will require review and approval from the Maine Department of Transportation. All overhead utility wires will need to be checked prior to starting the transportation of the components.



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