Final Environmental Impact Statement for the Stony Creek Wind Farm

A project under review in accordance with the regulations of the New York State Environmental Quality Review Act by the

Town Board of the Town of Orangeville,
Wyoming County, New York

DRAFT July 6, 2011

Issued by Lead Agency on _____, 2011

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Acronyms

ANSI	American National Standards Institute
APE	Area of Potential Effect
ARRA	American Recovery and Reinvestment Act
BP	Before Present
CSOO	Clear Skies over Orangeville
CPCN	Certificate of Public Convenience and Necessity
DEIS	Draft Environmental Impact Statement
DTI	Dominion Transmission, Inc.
EAF	Environmental Assessment Form
ECS	Electric Collection System
EIS	Environmental Impact Statement
EMP	Environmental Monitoring Plan
ENB	Environmental Notice Bulletin
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FTE	Full Time Equivalents
HCA	Host Community Agreement
ITC	Investment Tax Credit
JEDI	Job and Economic Development Impact
MW	Megawatt
MWh	Megawatt-Hour
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NYISO	New York Independent System Operator
NYSDAM	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSEG	New York State Electric and Gas Corporation
O&M	Operations and Maintenance
OPRHP	NYS Office of Parks, Recreation, and Historic Preservation
PCI	Panamerican Consultants, Inc.
PILOT	Payment in-lieu of Taxes
SEQRA	State Environmental Quality Review Act
SHPO	State Historic Preservation Office
SPDES	State Pollutant Discharge Elimination System
SPHINX	State Preservation Historical Information Network Exchange
SUP	Special Use Permit
SWPPP	Storm Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	United States Geological Survey
WTG	Wind Turbine Generator

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1 Introduction and Project Summary

This Final Environmental Impact Statement ("FEIS") has been prepared by the Town Board of the Town of Orangeville, Wyoming County, New York in accordance with the requirements of the New York State Environmental Quality Review Act ("SEQRA") and its implementing regulations, 6 N.C.R.R. 617, for the Stony Creek Wind Farm. This FEIS will be issued and filed by the Town of Orangeville Town Board as Lead Agency, as the basis for the Lead Agency's Statement of Findings.

Stony Creek Energy LLC ("Stony Creek"), an affiliate of Invenergy Wind North America LLC ("Invenergy"), proposes construction of the Stony Creek Wind Farm, a wind-powered electric generating facility in the Town of Orangeville, Wyoming County, New York (the "Project"). The Project Area is depicted in the map provided in FEIS Appendix A.2.a. The Project will consist of the installation and operation of up to 59 wind turbine generators ("WTG"), for the purpose of generating electricity for distribution through the New York power grid.

Specifically the Project includes:

- Construction and operation of up to 59 WTG. Stony Creek proposes to use General Electric 1.6-100 wind turbine generators. The GE 1.6-100 wind turbine has a hub height of 262.5 feet (80 meters) and a rotor diameter of 328 feet (100 meters) resulting in a maximum tip height of 426.4 feet (130 meters). This is an update to the turbine that was analyzed in the DEIS. More information on this turbine is provided in FEIS Section 3.1.
- Construction of a 34.5 kV electrical collection system consisting of buried cables that will connect all WTG and deliver electricity to an electric substation.
- Construction of a new electric substation where the Project will interconnect to an existing transmission line owned by New York State Electric and Gas ("NYSEG").
- Construction of access roads to allow vehicles to access the WTG during project construction and operation.
- Construction of an Operations and Maintenance ("O&M") facility for Project offices, garages, workspace and storage area for parts, tools and materials.
- One 262 feet (80 meter) tall permanent meteorological tower.
- A temporary construction staging area that will be used for construction trailers, parking, batch plant (if necessary), and temporary storage of equipment and material.

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2 SEQRA and Application Review Process

2.1 SEQRA Process Through the DEIS

This document is part of the Town of Orangeville's on-going review of the Stony Creek Wind Farm in accordance with Town of Orangeville local laws and the New York State Environmental Quality Review Act ("SEQRA"). SEQRA requires state or local governments to assess the potential environmental impacts of their actions in the planning, review, and decision-making processes for those actions. No local or state agency may approve an action until it has complied with SEQRA. The SEQRA review of the Stony Creek Wind Farm involves multiple agencies, and the Town of Orangeville Town Board, by agreement of the involved agencies, is the Lead Agency for review of the wind farm under SEQRA.

The first step in a SEQRA review is determining whether a proposed action may have a significant effect on the environment and, if so, preparation of an Environmental Impact Statement (EIS) (6 N.Y.C.R.R. § 617.14(a)). The applicant submitted to the Town a Full Environmental Assessment Form ("EAF"). Based on its review of the Full EAF, the Orangeville Town Board as Lead Agency determined that the Stony Creek Wind Farm could have a significant impact, and, therefore, on December 10, 2009 issued a Positive Declaration of Environmental Significance, requiring the preparation of a Draft Environmental Impact Statement ("DEIS"). According to the SEQRA regulations, "[t]he EIS provides a means for a project to systematically consider environmental effects along with other aspects of their project planning and design, and to identify and mitigate identified adverse environmental effects," (6 N.Y.C.R.R. § 617.14(a)). The DEIS should also evaluate all reasonable alternatives (6 N.Y.C.R.R. § 617.14(b)). The Town Board conducted scoping, including collection of public comments, to determine what issues should be included in the DEIS and the methodologies to be employed. A Final Scoping Document was issued by the Lead Agency on January 14, 2010.

2.2 DEIS and Public Comment

On February 18, 2010, the Town Board accepted a DEIS submitted by Stony Creek, issuing a Notice of Completion and starting a comment period that included a public hearing, and the receipt of written comments. Notice of both the comment period and the public hearings was published in the Town of Orangeville's official paper. Notice was also mailed to each Involved Agency and published in the Environmental Notice Bulletin. All of the referenced legal notices are contained in FEIS Appendix C.

On March 25, 2010, the Town Board conducted a public hearing on the Project at Camp Wyomoco in the Town of Orangeville. Over 200 people attended the public hearing and approximately 35 people spoke at the hearing. The Town Board also received numerous comments on the DEIS in writing that were received by the Town Clerk prior to the April 23, 2010 deadline for public comment. A transcript of the public hearing is located in FEIS Appendix D, and copies of all written comments are located in FEIS Appendix E.2.

The Town Board received DEIS comments on almost 1,100 issues in the form of 377 submittals from private parties, a letter from its SEQRA consultant Stantec, and five letters from public agencies.[1]

For purposes of this FEIS, a "submittal" is considered a letter, note, or other written communication delivered to the Town Clerk prior to the deadline for public comment. Each oral comment made at the public hearing by an individual is also considered a submittal. All submittals were assigned a unique number, and these numbers are used in Section 6 of this FEIS to identify each submittal.

Table 1 summarizes the submittals and issues the Town Board received on the DEIS. Table 2 lists the parties that submitted the majority of the comments. Of the 98 non-agency parties that submitted comments to the Town Board, 50% of the submittals came from 10 households, and 75% came from 20 households.

Table 1. Public Comment Sources

Commenter	#Submittals	# Issues Raised
NYS Dept of Ag & Markets	1	25
NYS Dept of Environmental Conservation	1	37
NYS Dept of Public Service	1	45
US Dept of the Interior (Fish and Wildlife Service)	1	38
Wyoming Co Health Dept	1	1
Stantec Consulting	1	132
Various Individuals	371	806
TOTAL	377	1088

[1] On May 29, 2010, 27 days after the comment deadline, the Town Board received a letter from the NYS Department of Environmental Conservation with its comments on the DEIS. Comments from this letter are included in the summaries in this section and the comments are addressed in Section 6 of this FEIS.

Table 2. Summary of Non-Agency Public Comment

No.	Commenter(s)	# Submittals	% of Total Submittals	Cumulative % of Total Submittals	# Issues Raised
1	Dickinson, Mary and Darryl	38	10%	10%	52
2	Nevinger, James and Mary	35	9%	20%	51
3	Makson, Linda and Paul	23	6%	26%	40
4	Humphrey, Peter and Sally	20	5%	31%	33
5	Dylag, Michael	16	4%	36%	23
6	Moultrup, Steven and Colleen	15	4%	40%	23
7	Burgio, Helen and Michael	14	4%	43%	19
8	Geoghegan, Heather	12	3%	47%	23
9	Hopkins, Harold and Mary Jo	12	3%	50%	17
10	Malicki, Alice and Richard	12	3%	53%	16
11	Wilkinson, Nyla and Ted	12	3%	56%	29
12	Orlowski, Joseph	10	3%	59%	14
13	Raab, Sheri	10	3%	62%	15
14	Ramsey, Donna and Gerald	10	3%	64%	33
15	Librock, John	9	2%	67%	12
16	Accardi, David and Marge	6	2%	68%	8
17	Bell, Ron	6	2%	70%	9
18	Davis, Barbara	6	2%	72%	9
19	Lomanto, Ron and Lynn	5	1%	73%	34
20	Clark, Kevin and Shirl	3	1%	74%	13
21	Sahrle, Gerald and Valerie	3	1%	75%	4
22	Zampogna, Joseph	3	1%	75%	3
23-37	[15 parties]	2 each	9%	84%	111
38	Core Environmental	1	<1%	84%	25
39	Gary Abraham	1	<1%	85%	16
40	E-Coustic Solutions	1	<1%	85%	14
41-98	[61 other parties]	1 each	15%	100%	326
TOTAL		371	100%		806

Notably, many of the issues raised were identical forms that had been copied and submitted by different individuals. To efficiently address all unique issues, the issues raised in each submittal were organized by topic and addressed in an FEIS on that topic.

Table 3 lists the topics into which the issues were grouped and the number of issues in each topic. A detailed cross reference for each submittal and the FEIS section(s) where its issues are addressed is provided in the FEIS Appendix E.1.

Table 3. Number Issues by Topic

FEIS Section	Title	Number of Issues
6.1	Project Purpose, Needs and Benefits	56
6.2	General Project Description	26
6.3	Alternatives	39
6.4	Project Construction	17
6.5	Project Operation and Maintenance	30
6.6	Permits and Approvals	2
6.7	Comprehensive Plan and Zoning	6
6.8	Topography, Geography and Soils	18
6.9	Land Use	40
6.1	Agricultural Resources	28
6.11	Ground Water	74
6.12	Streams and Wetlands	29
6.13	Plants	6
6.14	Forest Impacts	5
6.15	Birds	91
6.16	Bats	77
6.17	Post Construction Monitoring for Birds and Bats	13
6.18	Wildlife Other than Birds and Bats	25
6.19	Rare, Threatened, and Endangered Species	47
6.2	Noise	130
6.21	Shadow Flicker	6
6.22	Visual Resources	25
6.23	Public Roads	7
6.24	Cultural Resources	4
6.25	Electromagnetic Interference	20
6.26	Socioeconomics	25
6.27	Property Values	46
6.28	Public Safety	97
6.29	Blasting and Seismic Issues	14
6.3	Construction Monitoring	1
6.31	Decommissioning	52
6.32	Cumulative Effects	5
6.33	Miscellaneous/Uncategorized Comments	27
	TOTAL	1088

2.3 FEIS and Next Steps

This FEIS is the next step in the SEQRA process. The FEIS consists of a description of the Project, the DEIS (which is included by reference), changes to the proposed Project since the acceptance of the DEIS, additional mitigation measures proposed and discussion of alternatives, comments on the DEIS and the project consisting of the DEIS hearing transcript and submitted written comments, a Responsiveness Summary containing the responses to those comments, and additional studies, correspondence, and notices relevant to the review. The FEIS was prepared with the assistance of the Applicant, its consultants, the Town Board's SEQRA consultants (Stantec Consulting, Inc.; Hancock Estabrook, LLP; and the Law Office of David M. DiMatteo), but is the responsibility of the Town Board serving as Lead Agency.

Once the Town Board issues the FEIS, it will issue a Notice of Completion and circulate the FEIS. The completed FEIS must be available to agencies and the public for a minimum of 10 days before the lead agency and the involved agencies can make their respective findings as to the expected environmental impacts of the proposed project, after which such agencies are in a position to make their respective decisions on the proposed Project.

Under SEQRA, the Town Board, as Lead Agency, and each other involved agency, must adopt a formal set of written findings based on the FEIS. The SEQRA Findings Statement of each agency must (i) consider the relevant environmental impacts, facts, and conclusions disclosed in the FEIS; (ii) weigh and balance relevant environmental impacts with relevant social, economic, and other considerations; (iii) provide the rationale for the agency's decision; (iv) certify that the requirements of 6 NYCRR Part 617 have been met; and (v) certify that, consistent with social, economic, and other essential considerations, and considering the reasonable alternatives available, the action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable, and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporating as conditions to the decision those mitigation measures identified as practicable. Once the findings are adopted, the SEQRA process is completed, and the lead agency and involved agencies can begin to approve, approve with conditions, or disapprove the proposed project. Each involved agency must make its own SEQRA findings.

The Town Board is conducting the SEQRA review in parallel with its review of the applications submitted by Stony Creek. That review includes the submitted applications and all information in this FEIS, which supplements and is part of the applications review process. A table of requested approvals, including those needed from the Town is provided in Table 4. The Town Board has authority to approve, approve with conditions, or disapprove the applications.

Table 4. Stony Creek Permits and Approvals

Agency	Concern	Legislative Basis	Permit / Approval
Town of Orangeville, Town Board	Approval of Wind Energy Conversion Device	Article XI, Section 1116 of Town of Orangeville Zoning Code	Special Use Permit for Wind Energy Conversion Device
Town of Orangeville, Town Board	Site Plan Approval	Article III, Sections 303,304,304 and 306	Site Plan Approval
Town of Orangeville, Zoning Board of Appeals	Area Variance to Section 1116.B.1 (minimum distance to ROW of public road)	Article IV of Town of Orangeville Zoning Code	Area Variance to Section 1116.B.1.b.1.2
Town of Orangeville Highway Department	Construction of curb cuts		Driveway Approval
Wyoming County Building Inspector	Construction of O&M Building		Building Permit
Town of Orangeville Zoning Officer	Construction of ECS cables	Town Law 2 of 1983	Floodplain Development Permit
Wyoming County Planning Board	Referral for Review for County–wide issues	NYS General Municipal Law - Section 239 m	Zoning Recommendation
Wyoming County Department of Public Works	Construction of curb cuts and work within R.O.W.		Driveway Permit
Wyoming County Industrial Development Agency	Tax Abatements		Inducement Resolution, PILOT Authorizing Resolution
New York State Department of Environmental Conservation	Water Quality	Section 401 Clean Water Act	Water Quality Certification
New York State Department of Environmental Conservation	Wetlands Protection	Article 24	Wetlands Permit (Joint Application for Permit with NYSDEC)
New York State Department of Environmental Conservation	Stream Protection	Article 15	Permit for Disturbance of Bed or Banks
New York State Department of Environmental Conservation	Endangered and Threatened Species		Incidental Take Permit
New York State Department of Environmental Conservation	Storm Water Discharge		SPDES General Permit No. GP-02-01 for Stormwater Discharges from Construction Activities
New York State Public Service Commission	Electric Generation	Section 68 of the Public Service Law	Certificate of Public Convenience and Necessity ("CPCN")
New York State Department of Agriculture and Markets	Agricultural Protection		Consultation before and during construction
New York State Office of Parks, Recreation and Historic Preservation (SHPO)	Cultural Resources Protection	Section 14.09 of the State Parks, Recreation, and Historic Preservation Law, National Historic Preservation Act of	Consultation to determine effect.

		1966 Section 106	
New York State Department of Transportation	Transportation of Project Materials	Section 385 of the New York State Vehicle and Traffic Law.	Special Handling Permits - for loads exceeding legal dimensions and weights as specified in Highway Work Permit.
New York State Department of Transportation	Access Roads and ECS Crossings		Curb cut permits & Use and Occupancy Permits
National Telecommunications and Information Administration	Concerns regarding possible radio interference		Registration
United States Army Corps of Engineers	Wetlands and Stream Protection	Section 404 Clean Water Act	Nationwide Permit (Joint Application for Permit with NYSDEC)
Federal Aviation Administration	Aviation lights	14 CFR Part 77	Notice of Construction or Alteration

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3 Changes in the Project Since the DEIS

The SEQRA regulations require that an FEIS detail the changes made in a project since the issuance of the FEIS. As detailed herein, each of the changes proposed will reduce the environmental impact of the project.

3.1 Turbine Model

Since the submittal of the DEIS, wind turbine manufacturers have introduced turbines with longer blades that can generate more electricity at lower wind speeds. The wind turbine used by Stony Creek will result in potential impacts that are equal or less than those analyzed in the DEIS and FEIS. Specifically, the wind turbine used by Stony Creek will:

- have a tip height of 427 feet or less;
- have a maximum sound emission level equal to or less than 105 dBA;
- be designed to operate in the range of wind conditions expected in the Project Area; and
- be designed with appropriate containment for any hazardous chemicals in the turbine.

The turbine model that Stony Creek will use is the General Electric 1.6-100 turbine. This turbine is similar to the turbines described in the DEIS, with the main difference being that it has longer blades. It has a hub height of 80 meters (262.5 feet), a rotor diameter of 100 meters (328.1 feet), and a tip height of 130 meters (426.5 feet). FEIS Appendix A.1.a provides more information on this wind turbine, and FEIS Appendix A.1.b shows key dimensions and specifications of the 1.6-100 compared to the turbines analyzed in the DEIS.

3.2 Turbine Locations

Stony Creek re-evaluated the location of wind turbines, roads, and cables upon completion of updated wind analyses, several environmental studies, including detail wetland delineations and surveys for the Jefferson Salamander, noise studies, and shadow studies and after review of comments received from the public and state and federal agencies. The turbine locations in this FEIS contain several adjustments intended to minimize impacts to wetland, to minimize impacts to known breeding pools for Jefferson salamander, and to minimize fragmentation of forests and agricultural fields. FEIS Appendix A.2.j is a map comparing the locations of turbines in the DEIS and FEIS layouts. As shown in setback tables provided as FEIS Appendix A.2.k, the locations of the wind turbines in the FEIS layout are in compliance with the setback requirements of the Orangeville Zoning Code.

Compared to the original layout, the FEIS layout has eleven turbines that were relocated to different portions of the Project Area. As a result of the new locations, Stony Creek has re-

labeled the turbines with different numbers. In this FEIS, all turbine ID's refer to the ID's of the FEIS layout, unless specified otherwise. The eleven turbines that were relocated are:

- DEIS Turbine 9. This turbine was located between Nesbitt and Orangeville Center Roads, south of Buffalo Road. Field wetland delineations found this turbine was closer to a large wooded wetland than was originally thought. There is not enough room on participating landowner properties to move this turbine away from the wetlands, and thus this turbine was moved from this location to a location on Cobble Hill.

- DEIS Turbine 15. This turbine was located east of Nesbitt Road. It has been moved east and north to minimize noise levels at residences and to allow greater spacing from an upwind turbine that needed to move to minimize wetland impacts. In the FEIS layout, this turbine has is labeled T-16.

- DEIS Turbine 16. This turbine was located east of Nesbitt Road. It has been moved east and north to allow greater spacing from an upwind turbine that needed to move to minimize wetland impacts. In the FEIS layout, this turbine is labeled T-17.

- DEIS Turbine 17. This turbine was located east of Nesbitt Road. It has been moved east and north to allow greater spacing from an upwind turbine that needed to move to minimize wetland impacts. In the FEIS layout, this turbine is labeled T-19.

- DEIS Turbine 49. This turbine was located with a group of four turbines in an open area on the east side of Orangeville Center Road, south of Centerline Road. This turbine has been relocated to minimize impacts to wetlands found in field delineations. The new location is south of NYS Route 20A, away from wetlands. It is labeled T-33 in the FEIS layout.

- DEIS Turbine 50. This turbine was located in an open field that DEC recently determined contained wetlands under DEC jurisdiction. This turbine is relocated to be outside of the DEC wetlands and associated buffers. The new locations is also further from roads and dwellings. In the FEIS layout this is T-52.

- DEIS Turbine 52. This turbine was located at the back of a long field that required a long field to access and that was near wetlands that DEC recently determined were under its jurisdiction. This turbine is relocated require impacts from access roads and to not impact DEC wetlands and associated buffers. In the FEIS layout this is T-53.

- DEIS Turbine 55. This turbine was located south of Centerline Road, near Gath Road. At the DEIS location, this turbine was 520 feet from the existing NYSEG 230-kv transmission line, closer than 1.5 times tip height. This turbine has been relocated so that there are no turbines closer than 1.5 times tip height from the existing transmission line. The new location is north of NYS Route 20A, east of Gath Road, away from electric transmission lines. It is labeled T-32 in the FEIS layout.

- DEIS Turbine 56. This turbine was located in a wooded area, south of Centerline Road, near Gath Road. At the DEIS location, this turbine was 570 feet from the existing NYSEG 230-kv transmission line, closer than 1.5 times tip height. This turbine has been

relocated to minimize impacts to forested wetlands and so that there are no turbines closer than 1.5 times tip height from the existing transmission line. This turbine has been relocated so that there are no turbines closer than 1.5 times tip height from the existing transmission line. The new location is south of Quakertown Road in an open agricultural field and away from electric transmission lines. This location is labeled T-48 in the FEIS layout.

- DEIS Turbine 57. This turbine was located in a large contiguous wooded area, north of Quakertown Road. This turbine was relocated south to an open agricultural field to minimize impacts to forests, Jefferson salamander habit, and wooded wetlands. In the FEIS layout this is T-57.

- DEIS Turbine 58. This turbine was located in a large contiguous wooded area, north of Quakertown Road and also relatively close to a new 230-kV transmission line built in 2008 by Noble Environmental Power. This turbine was relocated south to an open agricultural field to minimize impacts to forests, Jefferson salamander habit, and wooded wetlands. In the FEIS layout this is T-58.

The 48 turbines other than those listed above are in the same general location as shown in the DEIS, except that most were adjusted slightly to minimize impacts. FEIS Appendix A.2.j shows the turbine locations in the DEIS and FEIS layouts.

3.3 Access Roads

Relatively minor adjustments have been made to Project access roads. The adjustments are made primarily to minimize wetland impacts, forest impacts, and the number of driveways required. Changes include:

- Access to T-24 and T-25. This access is now from T-23, instead of from Buffalo Road. The new route results in one less driveway entrance.

- Access to T-26 and T-27. This access is now from T-28, instead of from NYS Route 238. The new route results in one less driveway entrance.

- Access to T-57, T-58 and T-259. This access road has been modified to use an existing farm lane driveway and to follow around the edges of farm fields. The new route results in less forest impacts.

- Access to T-52 and T-53. This access is now from T-51, instead of from Orangeville Center Road. The new route results in one less driveway entrance.

- Access to T-50. This access is now from T-49, instead of from Orangeville Center Road. The new route results in one less driveway entrance.

- Access to T-47. This access is now from T-46, instead of from Orangeville Center Road. The new route results in one less driveway entrance and fewer wetland impacts.

- Access to T-39. This access is now from the road leading to T-40, instead of from T-38. The new route results fewer forest impacts.

- Access to T-37. The driveway entrance for this road has been moved west to use an existing farm lane. The new route follows and existing farm lane and results in fewer wetland impacts.

3.4 Cable Routes

The FEIS layout includes several adjustments to cable routes, made primarily to minimize impacts to wetlands and forest areas, but also to reduce the number of junction boxes required. Changes include:

- Cable from T-1, T-2, and T-3. This cable has been re-routed to avoid passing through a wooded area on the east side of Cobble Hill.

- Cable from T-24 to T-14. This cable has been re-routed to minimize wetland impacts.

- Cable from T-29. This cable has been re-routed to minimize wetland impacts and to reduce the number of stream crossings.

- Cable from T-57. This cable has been re-routed to eliminate a crossing through a contiguous forest area where Jefferson salamanders were found to be breeding.

3.5 Updated Project Documents and Plans

3.5.1 Complaint Resolution Plan

The complaint resolution plan provided in the DEIS has been updated to incorporate various public comments received during the SEQRA process. Updates include:

- Toll-free telephone number required,

- Response time on initial calls reduced to one business day, and

- Sharing of mediation costs revised.

3.5.2 ROW and Vegetation Management Plan

The Right-of-Way and Vegetation Management Plan provided in the DEIS has been updated to incorporate various agency comments received during the SEQRA process. Updates include:

- Seed mix used for restoration to be selected in consultation with landowner,

- Reclamation plans specified for the area around the substation, and

- Limitations on use of pesticides and herbicides specified.

3.5.3 Avian and Bat Post Construction Monitoring Plan

The Avian and Bat Post-Construction Monitoring Plan provided in the DEIS has been updated to incorporate various agency comments received during the SEQRA process. Updates include:

- Stony Creek will consult with NYSDEC on exact protocols for bird habituation and avoidance studies;
- Report due dates changed to match request of NYSDEC;
- Process specified for assessment of impacts and consideration of adaptive management; and
- New York Take Permit specified.

3.5.4 Agricultural Mitigation Plan

A project-specific Agricultural Mitigation Plan was not provided with the DEIS, but has been developed and is provided in FEIS Appendix A.3.e. The Stony Creek Agricultural Mitigation Plan requires compliance with guidelines from the NYS Department of Agriculture and Markets, plus specific actions raised by some comments to the DEIS.

4 New Analyses and Information Available for the FEIS

For the FEIS, new analyses were performed to assess potential impacts of the GE 1.6-100 wind turbine, to assess impacts of the adjusted turbine locations, and to respond to comments received from involved agencies and the public. These analyses are described in this section.

4.1 Updated Shadow Flicker Assessment

Stony Creek reassessed the likelihood of shadow flicker affecting residences using the same method as used in the DEIS and using the adjusted turbine locations and dimensions presented in this FEIS. Stony Creek commissioned Saratoga Associates to perform an analysis of potential shadow flicker hours at the Stony Creek Wind Farm. Saratoga performed the analysis using WindPRO 2.6 Basis software (Wind Pro) and model inputs that included a 3D terrain model of the Project Area; locations all residences, churches, hospitals, and libraries located within ¾ mile of any proposed WTG; the locations of WTG shown in this FEIS; dimensions of the proposed WTG using a 100m rotor diameter and 80m hub height; and information on tree cover across the Project Area.

The FEIS Appendix A.8.a is a map that shows expected shadow hours across the Project Area.

Shadow Flicker at Houses

Of the approximately 566 houses and structures in the Town of Orangeville, 438 are within ¾ mile of a proposed wind turbine and were explicitly analyzed in the shadow analysis. The houses that are in the Project Area but more than ¾ mile from a WTG are not expected to have any hours of shadow flicker. Table 5 lists the range of expected shadow hours for houses in the Project Area.

Table 5. Summary of Expected Shadow Flicker Hours for Orangeville Houses

Estimated Hours of Shadows Per Year	Number of Houses in the Project Area	Percentage of Houses in the Project Area
0 hrs/yr	410	72.4%
0-2 hrs/yr	13	2.3%
2-10 hrs/yr	77	13.6%
10-20 hrs/yr	25	4.4%
20-30 hrs/yr	28	4.9%
30+ hrs/yr	13	2.3%
Total	566	100.0%

Notes:

1. Statistics are given for all houses in the Town of Orangeville. Some of these houses are outside of the Project Area.

2. Houses more than ¾ mile from a wind turbine are not expected to have any shadow flicker hours.

3. Of the 438 houses that are ¾ mile or less from a wind turbine, 282 are expected to have no shadow flicker hours.

4. Includes the effect of trees blocking turbine visibility.

Table 6 lists the houses in the Project Area where expected annual shadow flicker hours exceed 30 hours per year. All of these houses are owned by people who are participating in the Project.

Table 6. Participating Residences with Over 30 Hours of Expected Annual Shadow Hours

House ID	Address	Expected Potential Shadow Hours per Year (hh:mm)	Participating Owner?
H-0152	3090 Orangeville Center Road	93:05	Yes
H-0326	2181 Nesbitt Road	88:12	Yes
H-0309	2029 Route 238	68:44	Yes
H-0375	2045 Gassman	54:46	Yes
H-0144	3175 Orangeville Center Road	50:43	Yes
H-0307	2026 Route 238	46:22	Yes
H-0345	3600 Orangeville Center Road	45:33	Yes
H-0298	2194 Route 238	42:43	Yes
H-0255	2380 Krotz	42:15	Yes
H-0284	2324 Route 238	36:43	Yes
H-0308	2006 Route 238	36:05	Yes
H-1201	4135 Route 20A	35:31	Yes
H-0243	2510 Orangeville Center Road	30:59	Yes

Shadow Flicker at Churches

One church is in the range of ¾ mile or closer from the proposed wind turbine sites. This is Sickley's Corner Community Church. Located on the Southeast corner of NYS Route 238 and Buffalo Road, this church is located approximately 1,800 feet from T-29. This location is also adjacent to structure H-0251, and as shown on the shadow map (provided as FEIS Appendix A.8.a) the annual hours of shadow flicker at this location is expected to be less than 2 hours per year.

4.2 Updated Visual Assessment

FEIS Appendix A.8 contains three additional tools to help assess the visual impacts of the proposed Project.

Updated Photo Simulations

All of the photo simulations provided in the DEIS have been recreated using the FEIS turbine locations and models of turbines with the dimensions of the GE 1.6-100.

Centerline Road Photo Simulation

Stony Creek had a new photo-simulation produced using a photograph taken from a point in the vicinity of Orangeville Center and Centerline Roads and looking west down Centerline Road. This simulation shows that in a normal field of view, looking west down Centerline Road, one wind turbine would be visible at a distance of approximately 1 mile away and the Sheldon wind turbines would be somewhat visible in the background. This simulation assumes turbines are at the locations shown in the FEIS layout and that turbines have the dimensions of the GE 1.6-100.

Zone of Visual Impact (ZVI) Map

Stony Creek had an updated zone of visual impact (ZVI) map produced using FEIS turbine locations and the 100m rotor diameter turbines proposed in this FEIS. This analysis found that, the visual impact of the FEIS layout with 100m rotor diameter turbines is very similar to the visual impact of the DEIS layout with 82.5m rotor diameter turbines.

Table 7 lists the acres where turbines would be visible under the ZVI analyses done in the DEIS and FEIS. As seen in the table, there is little increase in impact area with the 100m rotor. Of the approximately 185,000 acres within 7 miles of a wind turbine, with the 100m rotor instead of the 82.5m rotor there would be approximately 2,094 acres more (1.1% of the 185,000 acres within 7 miles of a turbine) where turbines, or parts of turbines, would be visible.

Table 7. Viewshed Coverage Changes with 100m Rotor Turbine

Number of WTGs Visible	Area Where Visible DEIS Study – 82.5m Rotor		Area Where Visible FEIS Study – 100m Rotor		Additional Area Visible with 100m Rotor	Percent Change
No Turbines Visible	129,260 acres	69.9%	127,989 acres	68.9%	-1,271 acres	-0.7%
1-5 Turbines Visible	12,893 acres	7.0%	12,723 acres	6.9%	-170 acres	-0.1%
6-10 Turbines Visible	7,256 acres	3.9%	7,372 acres	4.0%	116 acres	0.1%
11-15 Turbines Visible	5,182 acres	2.8%	5,524 acres	3.0%	342 acres	0.2%
16-25 Turbines Visible	8,554 acres	4.6%	9,355 acres	5.0%	801 acres	0.4%
26-35 Turbines Visible	6,955 acres	3.8%	7,254 acres	3.9%	299 acres	0.2%

36-59 Turbines Visible	14,730 acres	8.0%	15,437 acres	8.3%	707 acres	0.4%
Any Turbines Visible	**55,570 acres**	**30.0%**	**57,664 acres**	**31.1%**	2,094 acres	1.1%
Total Area Within 7 miles of a Turbine	**184,830 acres**	**100.0%**	**185,653 acres**	**100.0%**	**824 acres**	**0.4%**

Notes:

1. Statistics are calculated for all areas that would be within 7 miles of one or more wind turbines.

2. The DEIS study used the DEIS turbine locations and turbine dimensions of 80m hub height and 82.5m rotor diameter. The FEIS study used the FEIS turbine locations and turbine dimensions of 80m hub height and 100m rotor diameter.

3. In calculating the number of turbines visible, a turbine is considered visible if any portion of the structure is visible, even if it's just the tip of a turbine blade.

4. For all rows, but the last row, percent change is based off a nominal area of 185,000 acres that is within 7 miles of the proposed turbines. For the last row, percent change is the percent change in the amount of area that is within 7 miles of a wind turbine. This change is due to slightly different locations of wind turbines in the FEIS and DEIS layouts.

5. Visibility areas are from an analysis that considered the view- blocking affects of both topography and vegetation.

4.3 Updated Noise Assessment

Stony Creek consultant Acentech performed a new CADNA analysis to predict Project noise levels given two changes from the DEIS noise analysis: (i) turbine noise emissions were modeled using the latest specifications for the GE 1.6-100 turbine, and (ii) the turbine locations reflected the updated FEIS layout[2].

Acentech also performed new analyses to provide results using additional statistics. Statistics are reported in terms of: Leq during high wind conditions, average Leq, Lnight, Ldn, and C-weighted Leq.

Approach

All other parts of the analysis were the same as for the DEIS Noise Analysis. Specific assumptions and methods used include:

1. Wind turbines and the substation are assumed to be at the locations provided by Stony Creek as the "FEIS Layout" and shown in FEIS Appendix A.2.b

2. Residence locations are assumed to be at the locations shown in FEIS Appendix A.2.b.

3. Noise emissions from the WTGs are assumed to be equal to those specified by General Electric for the GE 1.6-100 and listed in Table 9. Sound power emission levels for the WTG were modeled as a function of wind speed. Sound power spectral values were also entered to allow calculation of dBA and dBC output levels. The maximum noise emissions for the GE 1.6-100 turbine is 105 dBA, which is between the 104 dBA and 106 dBA maximum emission levels for the two turbines analyzed in the DEIS.

4. Turbines are modeled as point noise sources located on towers 80 m tall.

5. The padmount transformers are modeled as point sources at the base of each turbine with an overall A-weighted sound power level of 87 dBA.

6. The main transformer is modeled as a point source located at its planned location in the substation, with an overall A-weighted sound power level of 102 dBA.

7. Topography of the Project area was assumed to match that of the USGS digitial elevation model (DEM) data that was provided to Acentech by Invenergy.

8. Propagation of project operating noise levels was modeled using the computer noise modeling program, Cadna/A. This commercial software program, which was developed

[2] An interim noise study was performed before the final movement of five turbines to reduce impacts to wetlands and the results of that study were presented to the Lead Agency. This FEIS presents the results of the noise study for the final layout.

by DataKustik GmbH, is widely-accepted by the international acoustics community for the calculation of community sound levels due to industrial sources. The calculations are performed for industrial sources according to the following international standards: (i) ISO 9613-1: Acoustics - Attenuation of sound during propagation outdoors, Part 1: Calculation of the absorption of sound by the atmosphere, and (ii) ISO 9613-2: Acoustics - Attenuation of sound during propagation outdoors, Part 2: General method of calculation.

9. The Cadna/A calculations account for spreading losses, atmospheric attenuation, ground effects, and terrain and other barrier shielding between each source and each receptor. For this study, the sound propagation routines and barrier calculations in the Cadna/A model are based on octave band sound pressure levels and on downwind conditions with a moderate temperature inversion.

10. Meteorological conditions are assumed to be 10°C (50°F) and 70%RH, moderate inversion.

11. All receptors downwind from turbines, a "worst case" scenario that results in sound levels that are conservatively higher than expected in the actual wind farm.

12. Ground conditions are assumed to be moderate soft ground with parameter G = 0.5 and spectral calculations for all sources.

13. Receptor heights are assumed to be 1.5m above local ground elevation.

Results

Results of the updated noise assessment are provided in FEIS Appendix A.7.g in the form of a table showing different noise statistics at 658 houses in the Project Area and a map showing predicted noise project noise levels throughout the Project Area.

Project Noise Levels During High Wind Conditions

With the GE 1.6-100 turbine, maximum Project noise levels will occur at times when the wind is blowing approximately 25 mph and higher at hub height. Based on wind measurements conducted by Stony Creek in the Project Areas, these conditions are expected to occur less than 700 hours per year (under 8% of the time).

The updated noise analysis shows that with the GE 1.6-100 turbine, at participating and non-participating residences, the maximum Project noise levels are less than were predicted in the DEIS for the GE 1.6xle wind turbine. This reduction in noise impact is attributable to the GE 1.6-100 having a lower noise emission level than the 1.6xle turbine and to the turbine locations being adjusted to be further from non-participating residences. Therefore, this Project change has reduced impacts.

Table 8 shows the Project noise levels for high wind periods, as predicted in the DEIS and the FEIS. As shown in the Table, FEIS noise levels are approximately 2 dB less than was predicted in the DEIS for the 1.6xle turbine.

FEIS Appendix A.7.g is a table listing Project noise levels at high wind conditions for all residences. FEIS Appendix A.7.e shows these noise levels on a map of the Project Area. Both show that Project noise levels during high wind periods are expected to be less than 45 dBA at all non-participating residences.

Note that this analysis is independent of the wind shear effects. The analysis assumes maximum noise levels from the wind turbines, which, for the GE 1.6-100, occurs when the wind speeds at 80 m are 11 m/sec (25 mph) and higher.

Table 8. Project Noise Levels for High Wind Periods in the DEIS and FEIS Analyses

House ID	Location	Type	Owner Status	Project Noise - DEIS Estimate for 1.6xle	Project Noise - FEIS Estimate for 1.6-100	Reduction of Noise Level with the 1.6-100
H-2015	Nesbitt Rd.	Seasonal	Participating	51 dBA	50.4 dBA	-0.6 dB
H-0152	Orangeville Center Rd.	Year-round	Participating	50 dBA	47.0 dBA	-3.0 dB
H-2010	Quakertown Rd.	Seasonal	Participating	49 dBA	47.1dBA	-1.9 dB
H-0144	Orangeville Center Rd.	Year-round	Participating	49 dBA	45.8dBA	-3.2dB
H-0298	NYS Route 238	Year-round	Participating	49 dBA	46.9 dBA	-2.1 dB
H-0309	NYS Route 238	Year-round	Participating	48 dBA	46.9 dBA	-1.1 dB
H-0307	NYS Route 238	Year-round	Participating	48 dBA	46.2 dBA	-1.8 dB
H-2016	Nesbitt Rd.	Seasonal	Non-participating	48 dBA	44.6 dBA	-3.4 dB
H-0138	Orangeville Center Rd.	Year-round	Participating	48 dBA	45.3 dBA	-2.7 dB
H-0326	Nesbitt Rd.	Year-round	Participating	48 dBA	47.9 dBA	-0.1 dB
H-0308	NYS Route 238	Year-round	Participating	48 dBA	45.7 dBA	-2.3 dB
H-0906	NYS Route 238	Year-round	Non-Participating	44 dBA	43.8 dBA	-2.2 dB
H-0253	Nesbitt Rd.	Year-round	Non-Participating	44 dBA	42.7 dBA	-3.3 dB

Notes:

1. This table includes the residences where the DEIS Noise Analysis for the 1.6xle case predicted the maximum Project noise levels of 48 dBA or higher for participants and 44 dBA or higher for non-participants.

2. All noise levels in this table are maximum project noise levels calculated using Cadna and assuming all wind turbines operating at maximum sound power levels with the wind direction such that every turbine is upwind from the residence being analyzed.

3. DEIS Noise levels were reported only to integer values.

Average Project Noise Levels

In addition to the Project high wind noise levels shown in Table 8, and to more fully assess the Project noise levels across the range of times that the Project would be operating, Acentech developed estimates of Project noise levels for several different wind speeds. Also, using the wind speed results and the expected annual hours that wind speeds are expected to occur, Acentech calculated annual average Leq values. The annual hours at each wind speed were

developed by Stony Creek from over three years of meteorological data collected at a meteorological station in the Project Area.

Noise levels for different wind speeds and the annual average Leq at residences in the Project Area are provided in FEIS Appendix A.7.g.

Table 9 lists the Project noise level results for the Non-Participating residence with the highest predicted Project noise levels. The Leq Project noise level at this Non-Participating residence is 38.9 dBA.

Table 9 and FEIS Appendix A.7.g also include statistics called "Lnight" and "Ldn". Lnight is a statistic used in a European World Health Organization (WHO-Europe) guideline on nighttime noise levels. Lnight is the annual average Leq noise level during nighttime hours. Ldn is a statistic that adds a 10 dB penalty to noises that occur during nighttime hours. Assumptions used to calculate these statistics are given in the notes to Table 9.

Table 9. Average Leq Project Noise Levels at Closest Non-Participating Dwelling

Wind Speed (at Hub Height)	Annual Hours	% of Annual Hours	WTG Sound Power Level	Project Noise Levels at H-0082
0.00 - 3.0 m/sec	902	10.3%	None	23.0 dBA
3.01 - 4.0 m/sec	798	9.1%	94 dBA	34.6 dBA
4.01 – 5.0 m/sec	1,029	11.8%	94 dBA	34.6 dBA
5.01 – 6.0 m/sec	1,238	14.1%	94 dBA	34.6 dBA
6.01 – 7.0 m/sec	1,172	13.4%	94 dBA	34.6 dBA
7.01 – 8.0 m/sec	1,036	11.8%	96 dBA	36.5 dBA
8.01 – 9.0 m/sec	829	9.5%	99 dBA	39.4 dBA
9.01 – 10.0 m/sec	624	7.1%	102 dBA	42.3 dBA
10.01 – 11.0 m/sec	452	5.2%	104 dBA	44.3 dBA
11.01 m/sec and higher	680	7.8%	105 dBA	45.3 dBA
Annual Average Leq				38.9 dBA

Notes:

1. Data on annual wind speed hours determined from 3 years of wind speed measurements at an on-site wind measurement station, from anemometers located 87.5 m above ground level. 87.5m speeds from this data set are assumed to be approximately equal to speeds at hub height of 80 m.

2. Project noise levels were calculated using Cadna model of the FEIS layout, assuming the WTG sound power levels shown in the table, main transformer sound power level of 102 dBA, and sound power levels of 87 dBA for the pad-mount transformers located at the base of every wind turbines. WTG sound power levels are equal to the specifications for the GE 1.6-100 wind turbine.

3. H-0082is a residence located on Quakertown Road that is approximately 1,350 feet away from turbine T-48. This is the closest Non-Participating residence to a proposed wind turbine location.

6. Leq is the average annual noise level, weighted on an energy basis, calculated by assuming the % hours at different noise levels match those shown in the table.

Maximum Project Ldn Noise Levels

For an existing noise environment, Ldn values are calculated using Leq statistics with a 10 dBA penalty to Leq values occurring during nighttime period, defined as hours between 10pm and 7am. The actual daytime Leq values and the nighttime Leq values, with the 10 dBA penalties, are then combined to result in a single Leq that is referred to as an Ldn.

The updated noise study provides maximum project Leq levels that will occur when winds are 25 mph or greater at hub height. The maximum Project Ldn value would result if winds were 25 mph or greater for a continuous 24-hour period. For this situation, the Project Ldn values would be 6.4 dBA higher than the Project high wind noise levels reported for all houses in FEIS Appendix A.7.g. This is clearly a "worst case" scenario that will occur infrequently, and one that would also likely be accompanied by higher than average ambient noise levels.

Average Project Ldn and Lnight Noise Levels

Actual Ldn values from the Project will depend on the variations in wind speeds, and noise levels, over the time in which measurements are conducted. Annual average Ldn values for the Project can be estimated using wind speed data collected by Stony Creek. Table 10 shows the time that different wind speeds occur in the Project Area during daytime and nighttime hours, and the annual average Ldn values that would result at the closest non-paraticipating residence for this distribution of wind speeds.

Lnight is a statistic used in a European World Health Organization (WHO-Europe) guideline on nighttime noise levels. Lnight is the annual average Leq noise level during nighttime hours. FEIS Appendix A.7.g contains average Lnight values calculated for all houses in the Project Area. These values assume the hours at different wind speeds during the night matches the nighttime wind distribution from measured data and shown in Table 10. Table 10 also shows average Lnight values for two non-participating residences.

Table 10. Project Ldn and Lnight Noise Levels at Closest Non-Participating Dwelling

Wind Speed (at Hub Height)	% of Annual Daytime Hours	% of Annual Nighttime Hours	WTG Sound Power Level	Project Noise Levels at H-0082
0.00 - 3.0 m/sec	11.1%	9.2%	None	23.0 dBA
3.01 - 4.0 m/sec	10.5%	7.1%	94 dBA	34.6 dBA
4.01 – 5.0 m/sec	13.0%	9.9%	94 dBA	34.6 dBA
5.01 – 6.0 m/sec	15.3%	12.5%	94 dBA	34.6 dBA
6.01 – 7.0 m/sec	13.3%	13.5%	94 dBA	34.6 dBA
7.01 – 8.0 m/sec	11.0%	13.0%	96 dBA	36.5 dBA
8.01 – 9.0 m/sec	8.7%	10.6%	99 dBA	39.4 dBA
9.01 – 10.0 m/sec	6.4%	8.2%	102 dBA	42.3 dBA
10.01 – 11.0 m/sec	4.5%	6.0%	104 dBA	44.3 dBA
11.01 m/sec and higher	2.9%	4.2%	105 dBA	45.3 dBA
Lnight, Annual Average				39.6 dBA
Ldn, Annual Average				45.8 dBA

Notes:

1. Data on annual wind speed hours determined from 3 years of wind speed measurements at an on-site wind measurement station, from anemometers located 87.5 m above ground level. 87.5m speeds from this data set are assumed to be approximately equal to speeds at hub height of 80 m.

2. Project noise levels were calculated using Cadna model of the FEIS layout, assuming the WTG sound power levels shown in the table, main transformer sound power level of 102 dBA, and sound power levels of 87 dBA for the pad-mount transformers located at the base of every wind turbines. WTG sound power levels are equal to the specifications for the GE 1.6-100 wind turbine.

3. H-0082 is a residence located on Quakertown Road that is approximately 1,350 feet away from turbine T-48. This is the closest Non-Participating residence to a proposed wind turbine location.

Low Frequency Project Noise Levels

As part of the reanalysis of Project Noise Levels, Acentech also calculated dBC noise statistics from all proposed Project components. C-weighted statistics weight lower frequency sounds more than the typical human ear and thus provide more information on the low frequency components of the Project noise levels. Table 11 shows the maximum low frequency Project noise levels predicted in the DEIS and the FEIS. As shown in the Table, FEIS low frequency noise levels are approximately 2 dB less than was predicted in the DEIS for the 1.6xle turbine, which again shows the benefit of the proposed change.

Table 11. Maximum Low Frequency Project Noise Levels in the DEIS and FEIS Analyses

House ID	Location	Type	Owner Status	Project Noise - DEIS Estimate for 1.6xle	Project Noise - FEIS Estimate for 1.6-100	Reduction of Noise Level with the 1.6-100
H-2015	Nesbitt Rd.	Seasonal	Participating	65 dBC	64.3 dBC	-0.7 dB
H-0152	Orangeville Center Rd.	Year-round	Participating	64 dBC	61.5 dBC	-2.5 dB
H-2010	Quakertown Rd.	Seasonal	Participating	63 dBC	61.5 dBC	-1.5 dB
H-0144	Orangeville Center Rd.	Year-round	Participating	63 dBC	60.6 dBC	-2.4 dB
H-0298	NYS Route 238	Year-round	Participating	63 dBC	61.3 dBC	-1.3 dB
H-0309	NYS Route 238	Year-round	Participating	63 dBC	61.2 dBC	-1.8 dB
H-0307	NYS Route 238	Year-round	Participating	62 dBC	60.7 dBC	-1.3 dB
H-2016	Nesbitt Rd.	Seasonal	Non-participating	63 dBC	59.8 dBC	-3.2 dB
H-0138	Orangeville Center Rd.	Year-round	Participating	62 dBC	60.2 dBC	-1.8 dB
H-0326	Nesbitt Rd.	Year-round	Participating	62 dBC	61.9 dBC	-0.1 dB
H-0308	NYS Route 238	Year-round	Participating	62 dBC	60.3 dBC	-1.7 dB
H-0906	NYS Route 238	Year-round	Non-Participating	60 dBC	58.8 dBC	-1.2 dB
H-0253	Nesbitt Rd.	Year-round	Non-Participating	61 dBC	58.5 dBC	-2.5 dB

Notes:

1. This table includes the residences where the DEIS Noise Analysis for the 1.6xle case predicted the maximum Project noise levels of approximately 62 dBA or higher for participants and 60 dBA or higher for non-participants.

2. All noise levels in this table are maximum project noise levels calculated using Cadna and assuming all wind turbines operating at maximum sound power levels.

3. DEIS Noise levels were reported only to integer values.

4.4 Area Impacts

The layout in this FEIS reflects adjustments made to minimize the impacts of turbines, roads, and cables to forest and wetland areas. Stony Creek has updated the Project's area impacts to account for these adjustments. In addition to using the FEIS layout for Project components, the updated area impact calculations include several other changes from the analysis performed in the DEIS. These are:

- Wetland areas are identified using field delineations performed as described in FEIS Section 4.15.

- Forest areas have been identified using aerial photography from 2009. This definition of forest area is considered more accurate that the NCLD data used to categorize land use areas in the DEIS.

- Turbine assembly areas are assumed to be smaller than was assumed in the DEIS. For the FEIS, turbine assembly areas assumed a full circle of 165 ft radius circle (200 ft radius was assumed in the DEIS area analysis) except that for turbines where a full circular area would result in unnecessary wetland impacts, the circular turbine assembly area was modified to avoid wetlands. The 165 ft radius allows for assembly of the 100 m rotor at ground level. In practice, full circular areas are not required or impacted, so this assumption likely results in conservatively high estimates of areas impacted for turbine assembly.

- Construction impacts to forest areas are categorized as permanent impacts, as suggested by the NYSDEC (see FEIS Section 6.14.4).

- Locations where ECS cables will likely be installed with directional boring techniques to minimize impacts to wetland or wooded areas have been identified and the reduced impacts from use of these techniques is incorporated into the calculations. Planned locations of directional bores that were used in the area calculations are shown by color coding of cable corridors in the map provided as FEIS Appendix A.2.i. The map shows 25 directional bores covering a total distance of 7,600 feet. (Note: Stream impacts are addressed in FEIS Section 4.16).

Table 12 and Table 13 list the temporary and permanent impacts calculated for the FEIS layout.

Table 12. Temporary Area Impacts

Impact Source	Wetlands	Forest	Other	Total
WTG Areas	0.00	36.22	70.35	106.6
Access Roads	0.28	28.86	84.15	113.3
ECS Cables	1.74	11.02	42.25	55.0
O&M Building	0.00	0.00	5.0	5.0
Met Tower	0.00	0.00	1.0	1.0
Laydown Yard	0.00	0.00	10.0	10.0
Substation	0.00	0.00	5.0	5.0
Total	2.02 acres	76.1 acres	217.8 acres	295.9 acres

Notes:

1. Wetland areas are based on field delineations of all impact areas performed in accordance with the manual of the U.S. Army Corps of Engineers

2. Forest areas are based on review of 2009 aerial photographs of the Project Area.

3. "Other Areas" include land in active agricultural uses, pasture, recently abandoned farm land, shrub land, and developed areas.

4. Temporary WTG area impact assumes a 165 ft radius around every turbine base, except that when a circular area would result in impact to a delineated wetland, the circular area is modified to not include the wetland. The temporary impacts at the wetland site include areas that will be used for the crane pad, the foundation excavation, cable installation, and WTG assembly.

5. Access road areas include 16 ft or 32 ft travel lane for standard and crane roads, respectively, plus 22 foot buffer on either side of the road. Where road buffers would impact a wetland, no buffer is assumed as in these areas Stony Creek plans to carefully build the road to minimize road width and impacts to wetlands. Areas that are used for farm lanes or logging roads prior to construction are categorized as impacted, even though they are being used for the same purpose before, during and after construction.

6. ECS cable impacts assumes 15 ft wide corridor impacted for every circuit installed. Where directional bore is used, ECS cable impact is zero.

Table 13. Permanent Area Impacts

Impact Source	Wetlands	Forest	Other	Total
WTG Areas	0.00	2.51	5.29	7.8
Access Roads	0.28	9.14	20.07	38.5
ECS Cables	0.00	0.00	0.00	0.2
O&M Building	0.00	0.00	2.00	2.0
Met Tower	0.00	0.00	0.10	0.1
Laydown Yard	0.00	0.00	0.00	0.0
Substation	0.00	0.00	2.00	2.0
Total	0.28 acres	11.7 acres	38.5 acres	50.6 acres
Forest Areas that will be cleared for construction but allowed to grow back partially or fully to forest:				
WTG Areas, allowed to fully re-grow	--	33.71	--	33.7
Road buffers, allowed to re-grow fully	--	19.71	--	19.7
ECS ROW, allowed to re-grow, but in forest areas will be managed with periodic mowing or clearing	0.22	11.02	--	11.2
TOTAL, assuming forest areas allowed to re-grow are permanently impacted	0.50 acres	76.1 acres	38.5 acres	115.1 acres

Notes:

1. Wetland areas are based on field delineations of all impact areas performed in accordance with the manual of the U.S. Army Corps of Engineers

2. Forest areas are based on review of 2009 aerial photographs of the Project Area.

3. “Other Areas” include land in active agricultural uses, pasture, recently abandoned farm land, shrub land, and developed areas.

4. WTG area permanent impacts result from crane pad, the foundation pedestal (16 ft diameter assumed), and a gravel apron (17 ft wide assumed).

5. Access road permanent impacts account for width of gravel travel lane. They assume crane roads are not narrowed to standard widths. Areas that are used for farm lanes or logging roads prior to construction are categorized as impacted, even though they are being used for the same purpose before, during and after construction.

6. Areas impacted during installation of ECS cables are assumed to not be permanently impacted. However, forest areas impacted for ECS cable installation are categorized separately so that they can be added as a permanent impact if desired. As specified in the Vegetation Management Plan, to ensure cables can be accessed without significant tree clearing and to minimize the chance of tree roots affecting operation of the electrical collection system, Stony Creek will periodically mow or clear a corridor approximately 15 feet wide above buried cables so as to prevent large trees from growing in the corridor.

4.5 Jefferson Salamander Surveys

Background

As part of its review of the DEIS, the NYSDEC commented that some of the proposed turbines, roads, and cables, could impact small water bodies that serve as breeding areas for the Jefferson Salamander. The NYSDEC is particularly interested in better understanding salamander use in the areas north of Quakertown Road where turbines 57, 58, and 59 were proposed in the DEIS project layout. The NYSDEC reported that Jefferson salamanders were suspected to be in these areas as part of its review of transmission lines recently installed in the area by the Noble Wethersfield wind project. (Note: in the FEIS layout, turbines 57 and 58 are relocated to be completely out of the wooded areas where NYSDEC was concerned about presence of the Jefferson salamander.)

The Jefferson salamander (*Ambystoma jeffersonianum*) is classified as a New York Species of Concern. This species inhabits deciduous or mixed forest, and permanent or temporary aquatic features (e.g., vernal pools, wetlands, fishless ponds, and road ruts) in these areas. The salamander's maximum home range size is less than 2,000 sq. ft., and its mean seasonal migration distances range up to approximately 826 feet. As shown in Figure 1 Jefferson salamanders occur widely in New York, and have been documented in Wyoming and surrounding counties. Known occurrences are documented in 39 of 62 (63%) New York counties.

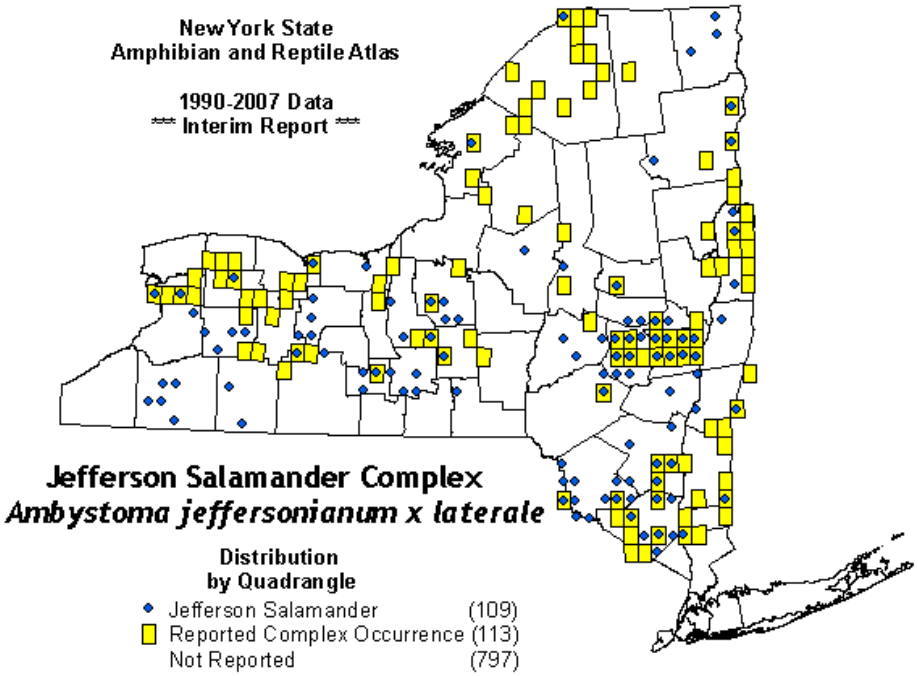


Figure 1. Jefferson Salamander Distribution in New York

The Jefferson Salamander is not listed by the federal government or by New York State as being either endangered or threatened. However, in New York the species is listed as a species of "Special Concern," because the NYSDEC judges there is a potential for this species to become threatened.

Salamander Surveys at Stony Creek

Stony Creek hired the environmental firm Shoener Environmental to conduct salamander surveys in the Project Area. The surveys were managed by a biologist with salamander survey experience. Results of the salamander surveys are documented in a report provided in FEIS Appendix A.4.b.

Stony Creek and Schoener Environmental coordinated the design of the salamander surveys with the NYSDEC, including locations and dates of the surveys. To coincide with the species' breeding and egg incubation period, surveys were conducted in April and early May, 2010.

Jefferson salamanders use temporary waters such as vernal pools, fishless or abandoned farm ponds, and deep road ruts as breeding habitat. These areas are typically in forests or near the edge of forests. Salamander surveys were conducted at forest areas where turbines, roads, or buried cables were proposed. Overall, 20 turbine sites were surveyed, and several thousand

feet of linear corridors were surveyed. The surveyed areas extended approximately 100 feet from the centerline of turbines, access roads, and electrical cable routes in the DEIS layout. Attachment 7 in the salamander study report shows the specific locations where surveys were performed.

Biologists conducted the field surveys on six different days between April 13 and May 13, 2010, with NYSDEC biologist Ken Roblee participating in the surveys on two of the six days of surveys. As shown in Figure 2 biologists worked in pairs and checked a variety of types of wet pools, including tire ruts.

Figure 2. Biologists Surveying for Salamanders in Orangeville

Survey Results

Field studies confirm that Jefferson salamander breeding habitat exists in the Project Area, including in several ponds and vernal pools in areas where direct construction impacts could occur from the Project. Biologists observed breeding habitat, egg masses, and one adult.

37 Jefferson salamander breeding ponds/locations were identified in the areas surveyed. The pools were located in various areas in, and adjacent to, the areas where the Project could have direct impacts. At each location, the size of the pools varied and the number of egg masses varied from 1 to over 300. FEIS Appendix A.2.d is a map that shows the FEIS layout and the Jefferson salamander breeding locations identified in the surveys conducted in response to DEC comments. The ponds, by number of egg masses found are:

- 1 location had 316 egg masses. This location, labeled AM in the Salamander Study Report, is a constructed farm pond in a wooded area west of Mengs Road. In the DEIS layout, a cable route was planned to pass by the edge of this pond AM. In the FEIS layout this cable has been re-routed to be approximately 500 ft away from the pond.

- 1 location had 103 egg masses. This location, labeled AL in the Salamander Study Report, is a constructed farm pond in a wooded area adjacent to the farm field near turbine T-5, west of Mengs Road. In the DEIS layout, a road was proposed to pass near the edge of this pond in the farm field. In the FEIS layout, this road has been adjusted to be further into the farm field so that it is 100 feet or more from the edge of the pond.

- 6 locations had between 50 and 85 egg masses. All of these locations are located in the southeastern part of the Project Area, north of Quakertown Road and east of Orangeville Center Road. In the Salamander Study Report, these are labeled as locations A, H, I, J, P, and AF.

    - Location A is a large wooded wetland that had 50 egg masses and was near the location of T-59 in the DEIS layout. In the FEIS layout, T-59 has been re-located and there is no construction activity planned within 100 feet of location A.

    - Location H is a small wooded wetland that had 65 egg masses and was close to the route for a cable and road in the DEIS layout. In the FEIS layout, the turbines in this wooded area have been relocated to adjacent farm fields, so no construction activity is planned near location H.

    - Location I is a medium-size wooded wetland that had 65 egg masses and in the DEIS layout was in the route for the cable and road to turbines T-57 and T-58. In the FEIS layout, these turbines have been relocated to adjacent farm fields, so no construction activity is planned near location I.

    - Location J is a medium-size open water area that had 83 egg masses and in the DEIS layout was close to the route for the cable and road to turbines T-57 and T-58. In the FEIS layout, these turbines have been relocated to adjacent farm fields, so no construction activity is planned near location J.

    - Location P is a large forest wetland that had 56 egg masses and in the DEIS layout was on to the route for the cable between turbines T-56 and T-57. In the FEIS layout, this cable route has been removed completely, so that this cable does not go through this forest area and no construction activity is planned near location P.

    - Location AF is a tire rut that had 57 egg masses and in the DEIS layout was close to the route for the cable that ran near the intersection of Quakertown and Orangeville Center Roads. In the FEIS layout, this cable route has been adjusted so that no construction activity is planned within 100 feet of location AF.

- 4 locations had 25 to 49 egg masses.

- 12 locations had 10 to 24 egg masses.

- 15 locations had at least one but less than 10 egg masses.

Additional details concerning locations with less than 50 egg masses are provided in the Salamander Survey Report.

The FEIS layout minimizes to this salamander by avoiding those ponds found to have the heaviest concentrations of egg masses and by avoiding wetlands to the extent practivable.

4.6 Northern Harrier Surveys

Because Northern Harriers are listed as threatened in New York, the NYSDEC requested additional information on the level of Northern Harrier use at the site, beyond what was observed in the 2007 and 2008 studies.

Background

Northern Harriers are listed as threatened by New York State and are protected under the federal Migratory Bird Treaty Act, but they are without any protective status under the federal Endangered Species Act. In New York State, breeding Northern Harriers have been confirmed in the western Great Lakes plain, open habitats of the Adirondacks, western Finger Lakes, Long Island, and the Hudson, Saint Lawrence, and Lake Champlain valleys.[3] The species, sometimes referred to as the marsh hawk, prefers open habitats, including marshes, grasslands, meadows, pastures, and croplands, as well as riparian woodlands. Northern Harriers typically nest on the ground, either alone or in loose colonies. Most nests are placed in areas of dense grassy or shrub-like vegetation, often in wet areas. Nests are constructed of reeds, grasses, forbs, weeds, and water plants. Northern Harriers commonly demonstrate minimal nest site fidelity (meaning they do not often use the same sites for nesting from year to year). Northern Harriers have been previously documented in the Project Area,[4] [5] and a pair of Northern Harriers was observed during a survey completed by Stony Creek in 2007.

Northern Harrier Observations at Stony Creek in 2007 and 2008

Northern Harriers were observed in the Project Area during studies conducted in 2007 and 2008. As described in survey reports provided in DEIS Appendix C, these observations were relatively infrequent. Specific observations were:

- Two individuals were observed on a day during May or June 2007. The biologists did not report whether the birds were male or female, but they reported they were flying low to the ground and hunting in a field near the intersection of Nesbitt Road and NYS Route 20A.

- One individual was observed on either January 16 or 17, 2008 flying over a snow-covered field near the intersection of Orangeville Center Road and Centerline Road. Biologists did not indicate the age or sex of the observed bird. During these winter surveys, biologists observed 40 different birds, and one was a Northern Harrier.

- One individual was observed between 11 am and noon on May 4, 2008. The biologists reported that this bird was either female or juvenile, and it was flying low and hunting

[3] New York Natural Heritage Program. 2009. Online Conservation Guide for *Circus cyaneus*. Available from: http://acris.nynhp.org/guide.php?id=6812. Accessed June 29th, 2010.

[4] Andrle, R. and J. Carroll. 1988. The Atlas of Breeding Birds in New York State. Cornell University Press, Ithaca.

[5] McGowan K. and K. Corwin. 2008. The Second Atlas of Breeding Birds in New York State. Cornell University Press, Ithaca.

near Nesbitt Road and NYS Route 20A. During this survey biologists observed 39 raptors, and one was a Northern Harrier.

- Two observations were made in Fall 2008: one on September 13, 2008 and a second on October 20, 2008. In both instances the bird was observed to be hunting in the vicinity of Nesbitt Road and NYS Route 20A during mid-day hours. It was not clear whether this was one individual seen two separate times or two individuals. During this fall survey there were 38 raptors observed, two of these observations were of Northern Harrier.

During the spring of 2010 Stony Creek conducted additional surveys to assess use of the Project Area by Northern Harriers. Stony Creek's 2010 survey was conducted from three observation points in open fields in suitable habitat where Northern Harriers had been previously documented (Attachment 3 of FEIS Appendix A.4.a). Survey points were in fields located near (i) Nesbitt Road and NYS Route 20A; (ii) Orangeville Center Road and Centerline Road; and (iii) Almeter Road. Surveys were conducted at each point in early May, in early June, and again in late June, 2010.

Northern Harrier Surveys at Stony Creek in 2010

In 2010, biologists working for Stony Creek observed Northern Harriers, including adult males and adult females, on six occasions on three different days. Most of the observations were made near Orangeville Center Road and Centerline Road. Specific observations made were:

- On April 29, 2010, at 8:00 am an adult female was observed flying in a field along NYS Route 238 near the Attica/Orangeville town line.

- On June 8, 2010, between 10:15 am and 10:38 am, two adult males were observed in ritualistic courtship flight behavior in a field near Orangeville Center Road and Centerline Road.

- On June 21, 2010, at 8:05 am, an adult male was observed flying over a field near Orangeville Center Road and Centerline Road, and then perching briefly on a tree in this same area.

- One June 21, 2010, at 8:27 am, an adult female was observed flying over the site where the male had perched earlier.

- On June 21, 2010, at 9:08 am, an adult male was observed flying across Dunham Road toward an open field.

- On June 21, 2010, at 11:03 am, an individual, sex and age unknown, was observed flying in fields around Griffin Road.

The survey protocol called for biologists to watch for behaviors that would indicate a possible nest and, if seen, to search for nests. Biologists did not observe behavior that would indicate a nest, so no ground searches were conducted.

Data collected during the survey indicate the species is present in the Project Area during the nesting season, but no specific evidence of the existence of any Northern Harrier nests was observed. Additional details concerning the 2010 Northern Harrier survey are available in FEIS Appendix A.4.a.

4.7 Forest Bird Surveys

Stony Creek performed additional forest bird studies in 2010 to address comments from NYSDEC regional staff and members of the public who requested more information on the bird species that may be in forest locations where turbines are proposed.

As part of the environmental studies conducted for the Stony Creek Wind Farm, point counts of forest birds have been performed in 2007 and 2010. This section summarizes the studies done in both years.

2007 Breeding Bird Surveys at Stony Creek

As described in the Breeding Bird Survey Report provided as a DEIS appendix, in 2007 Stony Creek had biologists perform a "Breeding Bird" survey where data was collected on all birds seen or heard at 27 specific pre-set "observation points." The 27 observation points were selected to represent the areas where turbines were expected to be sited, but to also cover the range of habitat types in the Project Area. Seven of the observation points were described as being in fragmented forest habitats; five of the observation points were described as being field or forest edge habitat. The remaining observation points were in open agricultural areas.

The 2007 survey observed 464 different birds a total of 65 different bird species in the Project Area. The number of species found by habitat type was:

- 42 different species were observed at the forest locations,
- 36 different species were observed at the agricultural locations, and
- 30 different species were observed at the edge habitat locations.

The 2007 survey reported that no endangered species were found in any locations, including in the forest habitat. The report also found that the species observed in all habitats, including in the forest habitat, were species that were common to the area and typical of the forest habitat.

2010 Forest Bird Surveys – Survey Design

The 2007 point counts were done at locations selected to represent typical turbine locations, but because turbine locations had not been selected at the time of the 2007 surveys, some of the 2007 survey points may have been locations where turbines were not proposed. Also, in the 2007 survey, the 27 observation points did not include any points in some locations were turbines are currently proposed, such as Cobble Hill, in the northwest corner of the town.

To provide additional information not in the 2007 surveys, in Spring 2010, Stony Creek hired biologists to perform point count surveys at forest locations where turbines are proposed. Surveys were performed at nine observation points selected in coordination with NYSDEC. These points were grouped in three forest areas where turbines are proposed:

- Survey Points 199, 200, and 201 were located on Cobble Hill in the northwest corner of the Project Area. Biologists noted that the forest at these points demonstrated heavy browsing by deer. The forest understory was relatively open.

- Survey Points 193, 194, and 195 were located in the southwest portion of the Project Area, west of Griffin Road. These points were in young deciduous forest near reclaimed agricultural land where brush and dense understory growth is common. Biologists noted that trails, ATV paths, and dirt roads were common in this area.

- Survey Points 196, 197, and 198 were situated in the south central portion of the Project Area, east of Syler Road. Biologists described the habitat in this area as mixed-aged deciduous forest where signs of recent forestry activity was evident.

In each forest area where surveys were performed, to ensure the survey counts produced independent sampling of forest interior species, the locations for the surveys were selected to be 300 feet or more from forest edges, 300 feet or more from mapped National Wetland Inventory (NWI) features, and approximately 820 feet or more from other survey locations.

In selecting the survey locations it was noted that the turbines in general are not proposed for undisturbed interior forest habitat. The main goal of the 2010 point count surveys to address concerns that the proposed Project may be impacting forest interior birds that were present in interior forest areas that were not properly surveyed in 2007. But, as described in the biologists' notes in the above bullets, even though the areas above were selected as being in the largest forested areas where turbines are proposed, their current condition was not found to be undisturbed, forest interior habitat. Instead, biologists found these areas, which have been surmised by some to be large undisturbed forest areas, were actually disturbed by ATV paths, trails, and forestry activities. Habitat fragmentation and loss, exotic and invasive flora and fauna, and successional changes in forest structure have affected habitat quality and quantity in these areas, likely influencing the abundance and presence of forest dwelling birds.

To conduct the surveys, an observer visited each of the nine survey points a total of three times, once each on May 11, June 7, and June 21, 2010. Surveys were initiated at sunrise and continuing no later than four hours past sunrise. Counts were not conducted in periods of heavy wind or rain, as per the NYSDEC 2009 *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects*. During an eight-minute period at each point, each bird observation was recorded including species, location, ID type (auditory or visual), and bird behavior.

2010 Forest Bird Surveys - Results

57 species were identified during the 2010 forest bird point count surveys. Of the 57 observed species one was a state-listed species. At five of the nine survey locations, biologists observed Cooper's Hawk, listed as a special concern species in New York. This species was not observed in the 2007 breeding bird survey. Potential impacts to Cooper's Hawk are discussed in FEIS

Section 6.19.7. None of the 57 species observed in the 2010 forest bird point count surveys were listed as federally-listed or state-listed as endangered or threatened.

Table 14 lists the ten bird species that were seen most often at the forest locations in 2010, and Table 15 lists the species that were most abundant across all of the sites in 2010. None of these common and abundant species are state or federally listed. In general, the surveys detected species typical for the habitat at the survey points. Additional details concerning the 2010 forest bird surveys are available in the FEIS Appendix A.4.a.

Table 14. Forest Birds Most Common in 2010 Surveys

Species	Federal Status	State Status	Frequency
black-capped chickadee	None	None	100%
ovenbird	None	None	100%
red-eyed vireo	None	None	100%
American crow	None	None	100%
Eastern wood-pewee	None	None	89%
American redstart	None	None	78%
American robin	None	None	78%
rose-breasted grosbeak	None	None	78%
scarlet tanager	None	None	78%
blue jay	None	None	78%

Note: Frequency is reported as the percentage of observation points where the species was observed one or more times. Surveys were done at nine observation points. A percentage of 100% indicates the species was observed at least one time at nine of the nine sites. A percentage of 78% means the species was observed at least one time at seven of the nine sites.

Table 15. Forest Birds Most Abundant in 2010 Surveys

Species	Federal Status	State Status	Abundance
black-capped chickadee	None	None	2.41/ha
ovenbird	None	None	1.41/ha
red-eyed vireo	None	None	1.41/ha
American redstart	None	None	1.13/ha
Eastern wood-pewee	None	None	0.99/ha
yellow-bellied sapsucker	None	None	0.99/ha
wood thrush	None	None	0.99/ha
American robin	None	None	0.85/ha
rose-breasted grosbeak	None	None	0.85/ha
hooded warbler	None	None	0.71/ha

4.8 Bald Eagle Use

Bald eagles were not observed at Stony Creek as part of any of the surveys conducted prior to the DEIS. They were not seen during the summer breeding bird survey, the spring or fall raptor migration survey, or during the winter raptor survey. However, based on comments of regional NYS DEC staff indicating use of Attica Reservoir #3 by bald eagles, Stony Creek hired biologists to conduct surveys in 2010 to identify and characterize bald eagle use of the Project Area.

Background

Bald eagles are classified as threatened by the State of New York, but are not listed under the federal Endangered Species Act. In the 1970's and 1980's, NYSDEC began reintroducing bald eagles into the state. There are more than 170 confirmed nesting pairs residing in the state as of 2009. NYSDEC has a well documented and extensive conservation program in place, with programs designed to protect essential breeding and winter habitat, monitor contaminant levels in the state's population, and identify causes of bald eagle mortality.[6] Bald eagles have been observed by NYSDEC officials and casual observers alike on multiple occasions at/near Attica Reservoir No. 3 including eight recorded sightings from 1999 and 2008. NYSDEC also reports a single winter record of a pair of adult eagles at the reservoir on January 10, 2008; and seven spring and summer records from April 19 to August 3 of mostly adult pairs with only one juvenile sighting record. Both New York Breeding Bird atlases (1985 and 2005) included "probable" ratings for bald eagles in this location, and an eagle pair was reported on 6/19/2000. The most recent date of a reported sighting prior to this survey occurred near Attica Reservoir on January 10, 2008. The nearest confirmed nesting pair were last observed in 2003 during surveys associated with the 2nd New York Breeding Bird Atlas, in Block 2472D in Letchworth State Park, approximately 20 miles southeast of the reservoir.

Bald Eagle Survey at Stony Creek

Stony Creek coordinated with NYSDEC on the approach to the bald eagle survey and the location of the survey observation point. The observation point was chosen to provide a satisfactory vantage point to observe the airspace between Attica Reservoir and Bantam Swamp; a wetland located 1.5 miles east of the reservoir. The general survey location was chosen primarily because of the reported historical presence of bald eagles in this vicinity, and also because of the proximity of turbine T-20. Searches for bald eagle nests were conducted in the vicinity of the swamp and the reservoir, either on foot or by driving the adjacent roads, making intermittent stops to search areas containing appropriate habitat.

Observations from the survey point were conducted a total of six times during the weeks of April 25, May 9, and June 6, 2010 for two days per week. Surveys were conducted beginning at sunrise and continuing until four hours after. During these observations, a thorough scan of all

[6] Nye, P. 2009. New York State Bald Eagle Report 2009. Available at: http://www.dec.ny.gov/docs/wildlife_pdf/baea2009.pdf. Accessed June 30, 2010.

visible airspace and shoreline was conducted and repeated. When an individual bird was observed, the bird was identified to species and its flight path was followed until it was out of sight.

Survey Results

Bald eagles were observed on six occasions, including observations on five of the six days in which surveys were conducted. On the sixth day, May 12, 2010, biologists surveyed the reservoir area for four hours but saw no bald eagles. Specific observations were:

- On April 28, 2010, at 6:45 am an adult was observed flying over the reservoir, chasing an osprey out of the reservoir.
- On April 29, 2010, at 9:30 am a subadult was observed flying over the northern part of the reservoir.
- On May 13, 2010, at 9:18 am an adult approached the reservoir from the northwest and circled high over the reservoir.
- On June 7, 2010, at 8:18 am a subadult circled over the reservoir for approximately 5 minutes before flying to the northeast, in the general direction of Bantam Swamp, but following a path that lead northward and then east, along a route that stayed approximately 3/4 mile from the nearest proposed turbine location.
- One June 7, 2010, at 9:44 am an adult eagle was seen circling the reservoir and flying along the east shore of the reservoir.
- On June 8, 2010, at 8:50 am an individual (age not identified) was observed flying above the reservoir in the south end of the reservoir.

As described above, adult bald eagles were observed on three occasions; sub-adult bald eagles in phase II plumage (a bald eagle in its third year) were observed on two occasions, and on one occasion observers sited a bald eagle of unidentified age. Most observations occurred over the Attica Reservoir, and only one observation, on June 7, 2010, occurred between Attica Reservoir and Bantam Swamp. In the 24 total hours of observations, all of the eagles observed were north of the proposed turbine locations and most were seen flying over the reservoir itself. The closest eagles appeared to come to proposed turbine locations was ¾ mile.

Bald Eagle Nest Searches

As part of the Bald Eagle surveys conducted in 2010, Stony Creek had biologists search for Bald Eagle nests in the Project Area. A total of 13.5 person-hours were spent searching the area surrounding the Attica Reservoir for eagle nests. Searches were completed within 2 miles of the observation point, including a band approximately 500 feet wide along the entire circumference of the reservoir, and at Bantam Swamp along Bantam Road. Additionally, wetlands, tributaries, and reservoir outflow areas within 2 miles of the observation point were searched. Although apparently suitable habitat was observed in the search area, no bald eagle nests were located.

4.9 Supplemental Bird Observations

During the 2010 surveys for Bald Eagle, Northern Harrier, forest birds, biologists also recorded birds of note that were seen incidentally, i.e., they were observed in the Project Area, but outside the scope of the specific study being conducted. Incidental observations in 2010 included sightings of the following birds included on the New York list of Species of Greatest Conservation Need:

- Worm-eating May Warbler (unlisted, seen in the woods East of Syler Road),
- Common Nighthawk (unlisted, seen flying near Nesbitt Road and Route 20A),
- Golden-winged Warbler (unlisted, seen near Nesbitt Road and Route 20A),
- Osprey (NY Special Concern, seen on the Attica Reservoir),

For a full listing of supplemental bird observations, refer to the 2010 bird survey report in FEIS Appendix A.4.a.

4.10 Forest Fragmentation

Background

Some comments received on the DEIS raised questions about the Project roads and cable routes crossing, and potentially fragmenting, large blocks of intact forest. In general, concerns regarding forest fragmentation are:

- Smaller forests patches typically support fewer plant and animal species than larger forest tracts. Species diversity decreases with decreasing patch size and with increasing patch isolation.
- Species in smaller isolated patches are different than species in larger intact tracts.
- Habitat fragmentation may reduce or alter the distribution of species.

Forests in Western New York developed following glaciations of the area, which ended as recently as 11,000 years ago. In pre-settlement times Western New York forests occurred in expansive, largely uninterrupted tracts dominated by hemlock, white pine, and northern hardwoods communities, including beech-sugar maple-basswood-elm-hemlock associations; and oak and oak-chestnut associations. During this time, forests likely covered nearly 100% of the Project Area.

Settlement brought significant changes to forests. In the late nineteenth century, forest clearing, largely for agriculture, reached its zenith in Wyoming County when 89% of the county was tilled or was in pasture/orchards[7]. Currently, approximately 41% of Wyoming County,[8] and 51% of the Project Area is in forest cover.

Large Forest Blocks Currently in the Project Area

To evaluate the potential forest fragmentation impacts of the Project Stony Creek mapped locations of large forest blocks in the Project Area. Forest boundaries were identified using aerial photography, but those areas that were known to have substantial development or disturbance (e.g., recreational activities, residential development) were not mapped as intact forest areas. In performing the mapping, Stony Creek made the observation that there are many more disturbances at ground level than appear in the aerial photographs. For instance, the block bounded by Orangeville Center, Centerline, Syler, and Dunham Roads appears on aerial photographs as one large forest block, but it is broken up by residential roads and structures.

[7] Wang, Y, C. Larsen, and B. Kronenfeld. 2010. Effects of clearance and fragmentation of forest compositiona; change and recovery after 200 years in western New York. Plant Ecology 208:245-258

[8] US Forest Service Forest Inventory and Analysis National Program data available at http://www.fia.fs.fed.us/tools-data/default.asp. Accessed July 22, 2010.

FEIS Appendix A.2.i is a map of the large forest blocks in the forest area. The analysis found 36 large blocks of forest, covering approximately 5,400 acres in the Project Area. The largest block of forest in the Project Area is an area between Quakertown, Centerline, Griffin, and Hermitage Roads that is an intact forest block of approximately 660 acres (of which only 444 acres is interior forest).

Interior Forest Areas

After mapping forest areas, Stony Creek evaluated the forest boundaries to identify the amount of habitat in the project area to support "interior forest birds." To identify areas of interior forest, Stony Creek relied on the habitat management recommendations for interior forest bird species.[9] Accordingly, areas were only counted as "interior forest" if they met the following criteria:

- The area was not within 300 feet of a forest edge. For example, for a large square block of forest measuring 2,000 ft x 2,000 ft, the outer 300 feet perimeter of this forest would not count as "interior forest." The interior forest would be a square area of 1,400 ft x 1,400 ft. are For large forest blocks, interior forest conditions are absent in a 300-foot wide band of forest adjacent to non-forested areas.

- The area was greater than 10 acres. Forest interior patches smaller than 10 acres are not considered habitat for forest interior birds.

- Within the area, there are no gaps in forest canopy of 30 feet or more.

After applying the criteria for interior forest habitat, Stony Creek found approximately 2,400 acres of interior forest, spread out over 25 patches ranging in size ranging from 10 acres to 440 acres. Table 16 lists all of the interior forest areas in the Project Area. Most of the interior forest patches in the Project Area are relatively small areas of less than 100 acres each; only six of the interior forest areas are 100 acres or more.

Project Impacts to Interior Forest Areas

Interior forest areas will be impacted by the Project where cables or access roads are run through the forest area. In general, cleared areas for one ECS circuit will be less than the 30 feet width used as a limit for defining forest habitat (area impact assumptions in the DEIS and in this FEIS assume cleared areas for ECS installation will be 15 feet wide), and thus these cuts should have limited impact on fragmentation of forest interior areas. Cleared areas for access roads will generally be wider and could have more of an impact on interior forest areas.

[9] Jones, C., J. McCann, and S. McConville. 2000. A Guide to the Conservation of Forest Interior Dwelling Birds in the Chesapeake Bay Critical Area. Prepared for Chesapeake Bay Critical Area Commission, Annapolis, Maryland.

Table 16 lists all of the interior forest areas in the Project Area and any impacts the Project would have to these areas. Of the 25 interior forest areas in the Project Area, 17 (68%) will not be affected by the Project. Of the 8 that will be affected, 3 will be partially crossed, and 5 will be full crossed by roads or cables. Modifications to the Project layout that have been made in the FEIS have significantly reduced potential impacts; the largest interior forest area, an area of 400 acres of interior forest located between Griffin, Quakertown, Hermatige, and Centerline Roads, is not affected at all by the proposed Project.

Table 16. Interior Forest Areas and Project Impacts

No.	Forest Block ID	Interior Forest Block ID	Full Forest Size in Project Area (acres)	Interior Forest Size (acres)	Bordering Roads (East/West)	Project Impact, Notes
Between Old Buffalo Road and the Orangeville/Attica Town Line						
1	145	145A	250 (Note 1)	120	Gassman / Standish	Partial crossing by 1 crane road, 1 ECS circuit.
2	37	37A	140 (Note 2)	63	Gassman / Exchange	None
3	30	30A	175 (Note 3)	99	Exchange / Nesbitt	None
4	39	39A	115	45	Nesbitt / Krotz	None
5	42	42A	160	56	Krotz / Route 238	Full crossing by 1 crane road, 1 ECS circuit.
6	34	34A	150 (Note 4)	45	Route 238 / Town Line	None
7	46	46A	70	12	Route 238 / Town Line	None
Between Buffalo Road and Route 20A						
8	45	45A	475	255	Snyder / Orangeville Center	Full crossing by 1 ECS circuit. Route selected to avoid wetlands.
9	53	53A	240	11	Orangeville Center / Nesbitt	None
10	53	53B	(Note 5)	98	Orangeville Center / Nesbitt	Full crossing by 1 ECS circuit.
11	54	54A	100	40	Nesbitt / Krotz	Partial crossing by 1 ECS circuit. Long directional bore under wetlands and creeks will eliminate complete crossing of this forest area.
12	61	61A	50	10	Krotz / Route 238	None
13	60	60A	180	64	Krotz / Route 238	None
14	62	62B	90 (Note 6)	22	Route 238 / town line	None
Between Route 20A and Centerline Road						
15	66	66A	325	175	Syler / Orangeville Center	Full crossing by 1 ECS circuit
16	72	72A	120	63	Orangeville Center / Gath	None
17	73	73A	70	32	Orangeville Center / Gath	None
Between Centerline Road and Dunham/Quakertown Road						
18	80	80A	385	246	Syler / Orangeville	Partial crossing by 1 ECS circuit, two

					Center	roads.
19	93	93B	70	16	Syler / Orangeville Center	None
20	82	82A	455	249	Orangeville Center / Griffin	Full crossing by 2 ECS circuits, partial crossing by standard road. Road follows existing logging road.
21	83	83A	660	444	Griffin / Hermitage	None
22	100	100A	120	45	Griffin / Hermitage	None
Between Dunham / Quakertown Road and Almeter Road						
23	107	107C	235	56	Syler / Orangeville Center	None
24	107	107B	(Note 7)	29	Syler / Orangeville Center	None
25	151	151A	200	98	Orangeville Center / Grohs	None

1. Forest block 145 is a 400 acre forest area; 250 acres are in the Project Area and 150 acres are outside the Project Area.

2. Forest block 37 is a 190 acre forest area; 140 acres are in the Project Area and 50 acres are outside the Project Area.

3. Forest block 30 is a 350 acre forest area; 175 acres are in the Project Area and 175 acres are outside the Project Area.

4. Forest block 34 is a 650 acre forest area; 150 acres are in the Project Area and 500 acres are outside the Project Area.

5. Interior blocks 53A and 53B are both inside forest block 53.

6. Forest block 62 is a 190 acre forest area; 90 acres are in the Project Area and 100 acres are outside the Project Area.

7. Interior blocks 107B and 107C are both inside forest block 107.

8. All acreage values are approximate.

9. Forest block IDs are shown on the map provided as FEIS Appendix A.2.i.

4.11 Cumulative Impacts to Birds and Bats

Projects Included in Cumulative Impacts Analysis

The area analyzed for cumulative impacts to birds includes all of Wyoming County. Wyoming County is already host to four operating wind projects, and Stony Creek would be the fifth commercial wind project in the county. No other projects are considered foreseeable in Wyoming County. The Dairy Hills Wind Farm, proposed for the Wyoming County Towns of Perry and Covington, is not being actively developed and is not considered foreseeable for purposes of this analysis. Similarly, projects previously under development by Noble Environmental Power in Cattaraugus and Allegany counties are no longer being actively developed and are not considered foreseeable. Table 17 lists the operating and foreseeable wind farms in Wyoming County that are evaluated for cumulative bird and bat impacts.

Table 17. Wyoming County Wind Farms – Operating and Foreseeable

No.	Wind Farm, owner	Status, notes	Turbine Information	MW
1	Wethersfield (Inel)	Operating (2000 COD)	10 Vestas V47 Turbines. 0.55 MW each, 47m rotor diameter, 65 m tower	6.6
2	Bliss (Noble)	Operating (2008 COD)	67 GE 1.5sle turbines. 1.5 MW each, 77m rotor diameter, 80 m tower	100.5
3	High Sheldon (Invenergy)	Operating (2009 COD)	75 GE 1.5sle turbines. 1.5 MW each, 77m rotor diameter, 80 m tower	112.5
4	Wethersfield (Noble)	Operating (2009 COD)	84 GE 1.5sle turbines. 1.5 MW each, 77m rotor diameter, 80 m tower	126.0
5	Stony Creek (Invenergy)	Foreseeable (DEIS accepted 2010)	59 GE 1.6-100 turbines. 1.6 MW each, 100m rotor diameter, 80 m tower	94.4
	TOTAL		295 wind turbines	440.0

Notes: COD = commercial operations date, i.e., the first year in which the project began delivering electricity to transmission grid.

Fatality Rate

Cumulative impacts to birds and bats at Wyoming County wind farms can be estimated using available data from post-construction mortality studies conducted at Wyoming County wind farms. As of February 2011, studies are available documenting bird and bat fatality rates at the Bliss Windpark in 2008 and 2009. Both studies provide data used to estimate direct bird and bat mortality from collisions with turbine blades or possible barotrauma. In both years, daily and weekly carcass searches were conducted from spring through fall at certain wind turbines in the project. In the studies, the search results are adjusted to account for searcher efficiency, carcass removal rates, number of turbines searched and other uncertainties. Separate estimates of

total mortality are given based on the daily and weekly search results. Both estimates are reported as fatalities per "period" per project, megawatt, and per turbine.

The studies do not account for mortality that could occur during winter months (e.g., December, January, February, and March), but because there is relatively little bird and bat activity in Western New York in the winter months, direct bird and bat mortality from the wind turbines is expected to be very low in the winter months. Thus, the rates from these studies can effectively be assumed to be annual mortality rates. Table 18 shows the average bird and bat fatality rates applicable for Wyoming County, New York. Note that as of the time of this study, public data is only available for the Bliss Windpark.

Table 18. Bird and Bat Fatality Rates at Wyoming County Wind Farms

	Average Rates		Daily Search Estimates		Weekly Search Estimates	
Project	#/WTG	#/MW	#/WTG	#/MW	#/WTG	#/MW
Bird Fatality Rates						
Bliss, 2008	2.5	1.7	4.30	2.86	0.74	0.50
Bliss, 2009	3.7	2.4	4.45	2.97	2.87	1.91
Average	3.1	2.1	4.4	2.9	1.8	1.2
Bat Fatality Rates						
Bliss, 2008	10.3	6.9	7.58	5.05	13.01	8.67
Bliss, 2009	6.4	4.2	8.24	5.50	4.46	2.97
Average	8.3	5.5	7.9	5.3	8.7	5.8

Notes:

1. Statistics are given in units of estimated fatalities per study period, which for all studies included the period from mid-April through mid-November. If the assumption is made that no fatalities occur in the winter months, these results can be assumed to be in units of fatalities per year.

2. Data is only included for the Bliss Windpark because this is the only Wyoming County wind farm for which data is publically available as of the time of this study.

Cumulative Impacts

Table 19 presents the estimated fatalities at Wyoming County wind farms calculated using the average fatality rates in Table 18 and the project information in Table 17. As shown in Table 19, cumulative impacts to birds is estimated to range from approximately 560 to 970 birds per year, and the cumulative impacts to bats is estimated to range from approximately 1,600 to 2,900 bats per year. Using the per turbine statistic, the statistic most commonly used to express bird and bat fatality rates, Stony Creek can be expected to have similar levels of bird and bat fatalities as for other wind farms in the county.

Table 19. Cumulative Bird and Bat Impacts at Wyoming County Wind Farms

	Estimated Bird Mortality	Estimated Bat Mortality

	Project	WTG Basis	MW Basis	WTG Basis	MW Basis
1	Wethersfield	33.0	19.0	99.0	54.0
2	Bliss	221.1	127.3	663.3	361.8
3	High Sheldon	247.5	142.5	742.5	405.0
4	Wethersfield	277.2	159.6	831.6	453.6
Total	Operating	974	561	2,921	1,593

Passerines, both resident and migrant, are likely to constitute the greatest number of fatalities in the Project Area, as this avian group represents the majority (75%) of mortalities at wind turbines nationwide and was by far the group most frequently observed during surveys within and near the Project Area.[10] Night-migrating passerines may be at a higher risk, as this group has accounted for over 50 percent of avian fatalities at certain sites, but no particular species or group of species has been identified as incurring greater numbers of fatalities.[11] Nationally, these mortalities have not been known to result in a significant population level impact to any one species, mainly because the migratory species with relatively high collision mortality are regionally abundant. Additionally, no large-scale night migration-related mortality events have been observed at wind farms as have been seen at communications towers.[12]

The biological significance of the cumulative loss of approximately 1,100 to 2,900 bats per year (from Table 18) from Wyoming County wind farms is difficult to assess, in part due to uncertainty in bat populations but also due to the impacts of white nose syndrome (WNS). WNS is a fungus recently discovered in caves in New York that is now causing significant mortality to the U.S. cave bat population. Cave bats, which are most risk from WNS, are typically not the bats most at risk from wind turbines. Post-construction studies have found the majority (often as many as 75%) of bat fatalities occur to migrating tree bats, not from cave bats, and thus far, migrating tree bats have not been heavily affected by WNS. Heightened concern about bat species and the threat of WNS are expected to result in more knowledge on bat populations and trends that can help assess the biological significance of the types of cumulative impacts that can be expected from the Wyoming County wind farms.

As discussed in the DEIS and FEIS Section 6.17, Stony Creek will perform post-construction bird and bat monitoring for the first two years of Project operation in accordance with guidelines of the NYSDEC. After the first two years of studies, additional studies or protocol modifications may be implemented to better understand impacts or to develop mitigation methods to reduce impacts at Stony Creek and other projects in Wyoming County.

[10] 2008 Post-Construction Bird and Bat Study Report for the Noble Bliss Wind Park, Table 3. This table shows that 12 of 20 identified birds were passerines. Note that 5 others were unidentified, and could also be passerines. Thus, at Bliss 60% to 85% of fatalities identified in the 2008 standard searches were passerines.

[11] Erickson et al. 2002.

[12] Erickson et al. 2002.

4.12 Energy Deliverability

Some comments on the DEIS questioned whether if the addition of the Stony Creek Wind Farm to the transmission system would affect the ability of existing renewable generators in the Western New York region to deliver energy to the transmission system (FEIS Appendix B.d). An Energy Deliverability Study has been performed that evaluates three different methods used to check the ability of Stony Creek to deliver energy to the transmission grid under a variety of future conditions. These methods are (i) a local transmission capacity evaluation, (ii) an available transmission capability analysis, and (iii) an energy flow analysis performed for the System Reliability Impact Study (SRIS) performed for and approved by the New York Independent System Operation (NYISO). All methods indicate that Stony Creek should be able to deliver 94.4 MW or more of electric power to the transmission grid with no impacts or "bottlenecking" of other renewable generators.[13] Each of the methods is summarized below.

Local Transmission Capacity

The local transmission capacity evaluation looks at the rated capacity of the 230-kV transmission line to which Stony Creek will connect and the amount of generation projects connected directly to it. This line is rated to carry 430 MW in the summer and 512 MW in the winter.[14] Currently, there are two wind farms connected to this transmission line, the High Sheldon Wind Farm with a maximum output of 112.5 MW and the Noble Wethersfield Windpark with a maximum output of 126 MW. Even in the unlikely scenario that both of the existing wind projects were operating at maximum output (238.5 MW), the addition of 94.4 MW from Stony Creek would not result in the normal line ratings being exceeded.

Available Transmission Capability (ATC) Analysis

The ATC analysis evaluates conditions of typical maximum demand during summer and winter, the typical generation levels during these conditions, and an assumption that line ratings not be exceeded even if one failure occurs in the transmission system. This analysis found that with the Sheldon and Wethersfield projects on-line and operating, the available transmission capacity would be 301 MW in the summer and 242 MW in the winter.

SRIS Load Flows

The third evaluation used interprets results of the SRIS load flow analysis performed by the NYISO to model all generation in the state, with and without the Stony Creek project. It evaluates energy flow analyses performed based on load cases developed by the NYISO for summer peak, winter peak, and low load cases. In all cases, renewable generators in the region, including the large hydroelectric facility at Niagara Falls were able to deliver the same amount of

[13] The Stony Creek Wind Farm is being evaluated by the NYISO for a connection that would allow a maximum injection into the grid of 88.5 MW. The rated capacity of the project is proposed to be 94.4 MW, but under its proposed interconnection Stony Creek will be limited to only injecting 88.5 MW of electricity into the grid at any instant in time.

[14] For purposes of this discussion ratings in units of MVA are assumed to be the same as ratings in MW.

electricity to the system whether or not Stony Creek was assumed to be connected and delivering power to the grid.

As described in the Energy Deliverability Study, the NYISO energy flow cases assumed that if Stony Creek were running at full output the NYISO system could be balanced by reducing output from large gas-fired and oil-fired generating units in Orange and Rockland counties. While this result does not guarantee that fossil fuels will be always displaced by the addition of the Stony Creek Wind Farm, it demonstrates that for a given period of time if extra energy is added to the system by Stony Creek, less energy will need to be generated by other sources. And there are many fossil sources in the NYISO system that could reduce generation (and fuel consumption) in order to accommodate the addition of Stony Creek. DEIS Section 1.1.6 presents additional discussion of back-up generation.

4.13 Historic Resources

Phase 1A Research

In September 2008, Stony Creek hired Panamerican Consultants, Inc. ("Panamerican") to conduct a Phase 1A investigation of historic and archaeological resources with the Project Area. This included:

- archival, documentary, and historical map research;
- a site file and literature search;
- review of the prehistoric and historic background of the Project Area;
- examination of properties listed in the New York State and National Register of Historical Places;
- assessments of the cultural resources sensitivity and past disturbances in the Project Area;
- a project walkover reconnaissance;
- significant standing structures and other aboveground features; and
- photographic documentation of conditions in the Project Area.

The Phase 1A identified five (5) individual National Register (NR) structures, one (1) NR-Listed Historic District, and 88 Individual NR-eligible (NRE) structures (including 18 cemeteries). The Phase 1A study was documented in a report that was forwarded to the SHPO for review and that is included as an attachment to the DEIS.

Phase 1B Historic Survey

In March 2010, Stony Creek hired Panamerican to conduct a Phase 1B 5-mile radius historic structure inventory and analysis to more fully assess the significant historic resources in the "Area of Potential Impact" (APE) for the proposed Stony Creek Wind Farm. The size of the APE is based on the area of potential visibility, thus it is significantly larger than the footprint of the Project, and much larger still than the area of actual physical improvements. The study was completed in summer 2010 and documented in a study report that is provided in FEIS Appendix A.5.c. The Phase 1B Architectural Survey Report was forwarded to the SHPO for review.

The Phase 1B historic structures investigation involved field surveys of buildings and other potential historic resources in the APE that were either National Register Listed (NRL) or potentially eligible for listing on the National Register (NRE). Panamerican conducted the survey in compliance with NYSHPO *Guidelines for Wind Park Development Cultural Resource Survey*

Work, the National Historic Preservation Act, the New York State Preservation Act, and all relevant state and federal legislation. As part of the survey, Panamerican also sought out local sources, references, and historical maps for additional information and background cultural resources in the APE. The survey report includes an index of properties with historic commentary and over 150 photographs.

Several previously determined NRL/NRE properties are in the APE: three individual NRL properties, one NRL historic district, 63 individual NRE properties, and one NRE historic district. In addition to the previously identified properties, Panamerican identified 36 properties and one potential historic district that are in the APE and that Panamerican recommends be considered by the SHPO for listing to the NR. The full list of all properties in the APE is given as Table 5.1 in the Phase 1B Architectural Survey Report. The 36 new properties and the historic district in the APE that Panamerican recommends for potential listing include 23 houses in the Village of Warsaw, 7 cemeteries, the Johnsonburg railroad depot in the Town of Sheldon, and the following properties in Orangeville and Attica:

- 3504 NY Route 20A (in the Town of Orangeville);
- 1128 Attica Gulf Road (in the Town of Attica),
- 848 NY Route 98 (in the Town of Attica),
- Attica Center Baptist Church (in the Town of Attica); and
- possible railroad depot, 716 NY 98 (in the Town of Attica).

The study found that no historic structures will be physically altered as a result of the Project, nor will access to historical, recreational, and commercial resources be impeded. The study also calculated visibility statistics based on the DEIS layout and use of the 1.5xle wind turbine. It found the average number of turbines that are visible from an NRL / NRE property is 13.5, and the average distance to the nearest turbine is 3.2 miles. From 63% of the properties only 0 to 10 turbines will be visible. It should be noted that the visual impact analysis performed by Panamerican does not include the screening effects of vegetation and other obstructions; thus, it undoubtedly overestimates the extent to which turbines will be visible. It is assumed that visibility statistics will be similar for the FEIS layout and the 1.6-100 turbine. As discussed in FEIS Section 4.2, the updated viewshed analysis found that, compared to the viewshed analysis with the DEIS layout and the 1.5xle turbine, only 1.1% more of the 7-mile viewshed area would have views of the project with the FEIS layout and 1.6-100 turbine.

It is the opinion of the Lead Agency that the presence of the turbines will not diminish the public's use of or enjoyment of the NRL/NRE properties.

4.14 Archeological Resources

Phase 1A Research

In September 2008, Stony Creek hired Panamerican Consultants, Inc. ("Panamerican") to conduct a Phase 1A investigation of historic and archaeological resources with the Project Area. This included:

As a part of the same Phase 1A study described in FEIS Section 4.13, Panamerican performed desktop and field surveys to assess the sensitivity of the Project Area for prehistoric and historic archaeological sites. The Phase 1A study concluded the likelihood of prehistoric sites is low, but that a more detailed Phase 1B archaeological investigation was warranted.

Field Testing Plan

Panamerican developed an archaeological study plan that it submitted to SHPO on December 4, 2009. The plan proposed digging 2,000 shovel tests at 5 meter intervals within the APE, with a sample checking for areas near map documented structures (i.e., structure locations identified on historic maps within or adjacent to the APE). On December 18, 2009, SHPO approved the plan.

Shovel Testing

In April 2010 Panamerican conducted a Phase 1B field survey in accordance with the SHPO approved plan and the New York State Historic Preservation Office Guidelines for Wind Farm Development Cultural Resources Survey Work (2006).

As part of the archeology Phase 1B field survey, Panamerican dug 2,000 holes to test for artifacts at nine (9) proposed turbine locations and 21 other areas where non-turbine project components were proposed. An archaeological field crew of approximately ten individuals dug and recorded the shovel test results and locations over a three week period. Figure 3 shows a typical plan used for the shovel tests and Figure 4 shows the crew performing tests at one of the tested sites. In addition to the shovel tests, a field director maintained a daily log and took photographs pertinent to manmade disturbances and environmental conditions.

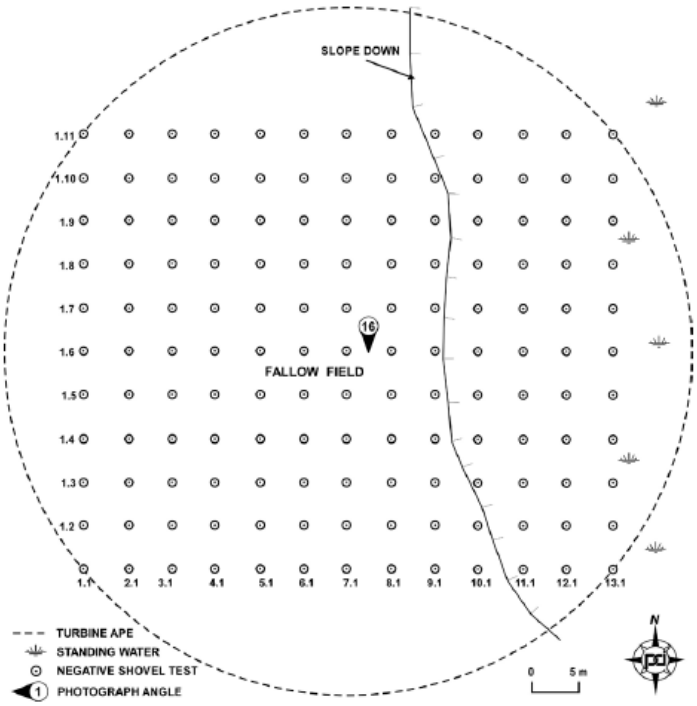


Figure 3. Typical Archeological Shovel Test Sites at a Wind Turbine Location

Figure 4. Archeological Shovel Tests Being Performed in Orangeville

At two locations Panamerican found historic and modern artifact scatters; however, neither were within the context of intact historical archaeological sites. Thus, the study found no prehistoric sites, no significant historic sites, and no sites recommended for avoidance or additional investigation. The shovel tests identified no evidence that any significant

archeological sites were present in the APE. Based on these results, the Panamerican recommended no further investigation of the proposed wind farm APE. Panamerican's report documenting the Phase 1B archaeological investigation is provided in FEIS Appendix A.5.b.

4.15 Wetlands

Delineations

The DEIS included estimates of maximum wetland areas in the Project Area based on field surveys and desktop reviews of soil maps. Since the issuance of the DEIS, Stony Creek engaged Earth Dimensions, Inc. ("EDI") to identify exact wetland boundaries using the delineations methods specified by the U.S. Army Corps of Engineers (USACE).[15] EDI performed field delineations during the period from April 19, 2010 through October 28, 2010. As part of the delineations, biologists reviewed all potential impact areas, reviewed local hydrology, plants, and performed soil tests. Wetland boundary points were identified by flags placed in the field. A survey technician with a high accuracy GPS unit then identified all flags so that the exact position of wetlands could be recorded and mapped. This method, endorsed by the USACE and NYSDEC , produces more accurate wetland boundaries than the NWI boundaries or preliminary survey boundaries that were used in the DEIS.

Results of the EDI work are provided in the EDI Jurisdictional Determination report (the "JD Report") provided in FEIS Appendix A.6.a.

EDI performed delineations in all areas of the Project Area that Stony Creek specified as likely to experience some construction impacts. In general, these areas were:

- All areas within 300 feet of a proposed turbine location;
- All areas within 100 feet of a proposed access road;
- All areas within 100 feet of a proposed ECS circuit;
- All areas where ground impacts could occur as part of construction of the Project Substation, O&M building, or laydown yard.

At the request of Stony Creek, EDI also screened some large agricultural fields for wetlands, so that Stony Creek would have a better understanding of limitations in adjusting turbine locations in some of these areas.

In total, EDI performed field reviews of approximately 2,500 acres of the Project Area. EDI identified 288 separate wetland areas that have a total area of approximately 126 acres. The JD Report provides details on each wetland area, including photographs, USACE datasheets, and maps of precise wetland boundaries.

[15] EDI applied methodology specified by the 1987 Corps of Engineers Wetlands Delineation Manual and Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. EDI used the Level 2 Routine Determination method (on-site inspection necessary) consistent with Part IV, Section D of the USACE Manual.

Wetland Impacts

Stony Creek used the wetland boundaries, the FEIS layout and GIS software in to calculate the areas of wetlands that would be impacted temporarily and permanently by the Project. Table 20 summarizes the results of the wetland impact analysis.

Table 20. Wetland Impacts

Impact Source	Temporary Impact (acres)	Permanent Impact (acres)
Wind Turbines	0.00	0.00
Access Roads	0.28	0.28
ECS Cables	1.74	0.22
O&M Facilities	0.00	0.00
Met Tower	0.00	0.00
Laydown Area	0.00	0.00
Substation	0.00	0.00
Total	2.02 acres	0.50 acres

Notes:

1. Temporary impact area includes all areas that will be impacted during the construction period, including areas that will be permanently impacted and areas that will only be impacted during construction.

2. Areas where an ECS ROW crosses an open wetland (e.g., a marsh) are categorized as temporary impacts, but not permanent impacts. Areas where an ECS ROW crosses through a wooded wetland are categorized as a permanent impacts.

Wetland Impacts from Wind Turbines

For the wind turbines, permanent impacts to wetlands would result if the foundation pedestal, pad-mount transformer, or gravel apron were located in a wetland area. Wind turbines have been located so that there are no permanent impacts to wetlands from the wind turbines.

Temporary impacts to wetlands from the wind turbines would occur if a wind turbine assembly area required some construction traffic or equipment laydowns to occur in a wetland area. As part of the wetland impact analysis, Stony Creek looked individually at every the assembly area for every wind turbine. Where no wetlands were in the vicinity of the wind turbine, a circular assembly area of approximately 165 feet radius was assumed. If wetlands fell within 165 feet of a wind turbine, then the assembly area was assumed to be a modified circular area that would not impact wetlands. For turbine sites where a significant portion of the full assembly area includes wetlands, Stony Creek reviewed the area to ensure that the turbine assembly could occur with the limited non-wetland area available. If necessary, the turbine location was adjusted so that the assembly could be performed with minimal impacts to wetlands.

As a result of the process described above, Stony Creek has developed a layout where the wind turbine assembly areas will have no temporary or permanent impacts to wetlands. For those locations where wetlands are within 165 feet of a wind turbine location, during construction of

the Project Stony Creek will install temporary fencing around these wetlands to prevent traffic from impacting the wetland during assembly of the wind turbine and its foundation.

Wetland Impacts from Access Roads

Stony Creek has reviewed the EDI wetland delineations against routes of all access roads and has adjusted the access roads to minimize impacts to wetlands and streams. In some situations where full avoidance of a wetland or stream was not practicable, Stony Creek has routed the access road to follow an existing logging road or farm lane through a wetland area or over a stream.

For the full project, there are 12 locations where an access road is expected to impact more than 0.01 acres of wetland or stream areas. Most of these locations are through wetlands in open fields or scrub areas, but at four locations project access roads will cross streams or wetlands in forest areas. At these four locations, Stony Creek is minimizing impacts by building standard roads and not the wider crane roads.

For locations where an access road is constructed over a stream, Stony Creek will install a culvert in the streambed with appropriate gravel fill on each side of the culvert. Stony Creek will also install culverts at wetland crossings where significant cross-drainage is evident.

To minimize potential for rutting in wetland areas, Stony Creek will use tracked bulldozers and excavators for construction of access roads in wetland areas, and cranes will not cross wetland areas except when roads have been constructed through the area. Construction of access road crossings over stream or wetland areas will typically take a few days to complete.

Wetland areas temporarily disturbed during construction will be restored to pre-construction contours and allowed to re-vegetate naturally. Wetland topsoil typically contains a viable seed bank of wetland species and should not require introduction of new seed. For temporarily-disturbed wetland areas that are in active agricultural use, Stony Creek will restore the area in accordance with the guidelines of the New York State Agriculture and Markets. Stream banks disturbed during access road installation will be restored to original grades and contours and stabilized by seeding and/or mulching.

Wetland Impacts from ECS Cables

Stony Creek has reviewed the EDI wetland delineations against routes of all buried ECS cables and has adjusted the ECS routes to minimize impacts to wetlands and streams. In some situations where full avoidance of a wetland or stream is not practicable, Stony Creek will install the ECS circuit using a directional bore to go under the wetland or stream area with no surface disturbance. Directional bore installations cost significantly more to complete, but have the benefit of eliminating surface disturbance. Stony Creek plans to use this approach where large wooded wetlands are present, but does not intend to use it where small wetland pockets are crossed by ECS cables.

In performing the wetland impact analysis, Stony Creek assumed that permanent wetland impact would result from installation of an ECS cable through a wooded wetland using surface installation techniques. In these areas, Stony Creek will clear an area of approximately 15 feet wide to provide equipment access. Stony Creek will then install the ECS cables using a tracked, excavator or other cable trenching machine. After the cable is installed, Stony Creek will fill in the trench with native materials restore the surface to original contours. Wetland topsoil typically contains a viable seed bank of wetland species, and thus reseeding is not planned in these areas. Stony Creek will allow the area to regrow and return to a functioning wetland. However, Stony Creek will periodically review growth in areas where ECS cables are operating, and it may elect to clear trees growing in these areas so that roots do not interfere with cable operation and that access is maintained if needed for cable maintenance. Thus, for these areas the Project will likely change the wetland from a wooded wetland to an open wetland. In the wetland analysis these impacts are assumed to be 15 feet wide and they are assumed result in temporary and permanent wetland impacts. In total, Stony Creek estimates there will be 0.22 acres of permanent impacts from ECS cables being installed in wooded wetlands.

For areas where Stony Creek will install an ECS cable through a wetland in an open agricultural field, pasture, or area of scrub shrub, Stony Creek will perform the installation using a cable plow. This method offers less control of the bed in which the cable is installed, but it is desirable from an environmental perspective because it results in minimal surface disturbance. For these areas, the wetland impact analysis assumed there would be a temporary impact, but not a permanent impact to wetlands. This approach is consistent with past determinations by the USACE.

Wetland Impacts from Other Facilities

The wetland delineations found no wetlands in the areas where Stony Creek proposes to construct the substation, O&M building, permanent met tower, or the construction laydown yard. Thus, there are no temporary or permanent impacts to wetlands resulting from these facilities.

State-Regulated Wetlands

Wetland areas of more than 12.4 acres could be under the jurisdiction of the NYSDEC. The NYS NYSDEC regulates activities that occur in these “DEC wetlands” or within 100 feet of the edge of NYSDEC wetlands.

Prior to completion of the EDI delineations, the NYSDEC had four NYSDEC wetlands identified in the Project Area. These are shown in DEIS Map 4. Project facilities crossed through a narrow portion of one of these NYSDEC wetlands and did not cross or come within 100 feet of the other three NYSDEC wetlands in the Project Area. The one NYSDEC wetland that was potentially impacted was a wetland near the intersection of Buffalo Road and Snyder Road where Stony Creek planned to install a buried ECS cable.

The EDI delineations provide more accurate information on the boundaries of NYSDEC wetlands in the Project Area. The NYSDEC will likely use the EDI delineations to establish new boundaries for the wetland near Snyder Road and Buffalo Road, and it may elect to identify new areas as NYSDEC wetlands. If NYSDEC elects to categorize new areas as NYSDEC wetlands, some of the Stony Creek ECS cables and access roads may be within 100 feet of the NYSDEC wetlands and will be reviewed by the NYSDEC .

Absent the NYSDEC taking jurisdiction over new wetlands in the Project Area, the ECS cable near the Snyder and Buffalo Roads is the only potential impact to NYSDEC wetlands. Stony Creek will install this ECS circuit using a directional bore, and thus the Project is not expected to have any impacts to DEC-protected wetlands or buffer areas. Note, however, that Project access roads and ECS cables may cross DEC-protected streams. These are discussed in FEIS Section 4.16.

Wetland Mitigation Areas

If the USACE determines that the temporary or permanent impacts from the Stony Creek require compensatory wetlands be built or protected as a mitigation measure, then Stony Creek will provide wetland mitigation areas in consultation with the USACE. If wetland mitigation areas are located in the Project Area, they will be on property where Stony Creek has an agreement with the landowner to allow for modification or protection of wetland areas. Typically, for a project with the acreage impacts of the Stony Creek Wind Farm, the wetland mitigation area, if any, will be 1.5 acres or less. Such an area would be installed and maintained under the guidance of biologists hired by Stony Creek, with periodic reviews by the USACE or the NYSDEC.

4.16 Stream Crossings

Several DEC-mapped streams exist in the Project Area; several of these are DEC-protected streams that are classified by the NYSDEC as class A. There are 35.4 miles of NYSDEC mapped streams in the Project Area; 20.6 miles of which are DEC-protected as class A or class A(ts). DEIS Map 4 showed the locations of DEC-mapped streams and the DEIS layout.

The DEIS layout included 22 locations where the ECS would cross DEC-mapped streams and several locations where access roads cross streams.

FEIS Appendix A.2.d is an updated map that shows the DEC-mapped streams, the FEIS layout, and field-delineated wetlands. Stony Creek has reviewed the field delineations and adjusted the locations of Project components to minimize impacts to mapped streams. As a result, the FEIS layout has fewer stream crossings that was expected in the DEIS. As proposed, the Project has 19 locations where the ECS would cross DEC-mapped streams and five locations where access roads would cross NYSDEC mapped streams.

Specifics on the stream crossings, including construction methods to minimize impacts are provided below.

4.16.1 Wind Turbine Impacts to Streams

Using the EDI field information on wetlands and streambeds, Stony Creek adjusted the locations of wind turbines so that the turbines can be constructed without impacting DEC-protected streams. Table 21 lists the two wind turbines where a wind turbine assembly area of 165 feet radius could result in an impact to a stream identified by the DEC.

To construct the wind turbines listed in Table 21, Stony Creek will modify the wind turbine assembly area so that there are no direct impacts to these streams or the stream beds. As part of preparation of the wind turbine assembly areas for these turbines, Stony Creek will install temporary fencing around the banks and wetland areas surrounding these streams, and construction monitors will ensure that no traffic enters the areas that are marked by the temporary fencing.

Table 21. WTG Assembly Areas Near Streams

WTG ID	Stream Crossed	DEC Class	Wetland ID	Surrounding Habitat	Distance to Streambed Center	Distance to edge of nearest Wetland
DEC-Protected Streams						
T-37	Tonawanda Creek - trib	A	W-74	Hedgerow	180 ft	175 ft
T-39	Tonawanda Creek - trib	A	W-78/W-90	Wooded	120 ft	110 ft

Notes:

1. Surrounding habitat was identified from review of aerial photographs. "Hedgerow" is used to describe areas where trees may be growing around the stream but not more than approximately 50 feet on either side of the stream.

4.16.2 ECS Impacts to Streams

The electric collection system has been designed to minimize stream crossings to the extent practicable. The ECS crosses DEC-identified streams at 24 locations listed in Table 22. Because at some location there are multiple circuits crossing streams, a total of 35 ECS circuits are estimated to cross DEC-identified streams. Of the 35 ECS circuit crossings, four are of streams that are class C streams that are not protected (i.e., East Koy Creek and Stony Creek and its tributaries). Two crossings are of a tributary of Crow Creek that NYSDEC indicates it intends to upgrade to class A(ts).

Table 22. ECS Stream Crossings

Location No.	Stream Crossed	DEC Class	Wetland ID	Surrounding Habitat	# Circuits
		DEC-Protected Streams			
1	Stony Brook	A	W-249	Scrub	1
2	Stony Brook – trib	A	W-3	Scrub	3
3	Stony Brook – trib	A	W-3	Hayfield	1
4	Stony Brook – trib	A	W-7	Hayfield	1
5	Stony Brook – trib	A	W-15	Scrub	1
6	Stony Brook – trib	A	W-164	Wooded	1
7	Stony Brook – trib	A	W-194	Scrub	3
8	Stony Brook – trib	A	W-196	Scrub	3
9	Stony Brook – trib	A	W-196	Scrub	3
10	Stony Brook – trib	A	W-197	Hedgerow	3
11	Stony Brook – trib	A	W-3	Scrub	1
12	Tonawanda Creek - trib	A	W-2	Hayfield	1
13	Tonawanda Creek - trib	A	W-74	Hedgerow	1
14	Tonawanda Creek - trib	A	W-78/W-90	Wooded	1
15	Tonawanda Creek – trib	A	W-283	Wooded	1
16	Stony Brook – trib	A	W-260	Wooded	1
17	Stony Brook – trib	A	None (near W-183)	Scrub	1
18	Stony Brook – trib	A	None (near W-5, W-7)	Scrub	2
19	Crow Creek – trib	A (ts)	W-34	Wooded	1
20	Crow Creek –trib	A(ts)	W-133	Hedgerow	1
				TOTAL	31
		Un-Protected Streams			
1	East Koy Creek	C	W-48	Wooded	1
2	Stony Creek – trib	C	W-104	Hedgerow	1
3	Stony Creek – trib	C	W-256	Wooded	1
4	Stony Creek – trib	C	W-257	Scrub	1
				TOTAL	4

Notes:

1 Surrounding habitat was identified from review of aerial photographs. "Hedgerow" is used to describe areas where trees may be growing around the stream but not more than approximately 50 feet on either side of the stream.

Stony Creek plans to complete the crossings in Table 22 by trenching across the streambed or by using directional bores. Where trenching is used, each circuit crossing is expected to impact a segment of the stream and stream bank approximately 15 feet wide. Thus, if all streams are crossed by trenching, the total length of impacts is estimated to be 375 feet of protected

streams and 60 feet of un-protected streams. To mitigate the temporary impacts of these crossings and to ensure any impacts are not permanent, Stony Creek will employ the following mitigation measures:

- Dry Stream Beds. When installing ECS cables across DEC-protected streams, Stony Creek will ensure the streambed is dry when construction activities are taking place. Many of the stream crossings listed in Table 22 may be intermittent streams with no flow during the period when construction is taking place. If a stream does contain flow when construction needs to occur, then Stony Creek will temporarily dam flow upstream before conducting construction activities in the stream bed.

- Wooded Banks. Of the 20 locations where ECS circuits will cross DEC-protected streams, five are in wooded areas, three are in hedgerow areas, and nine are in scrub areas, and three are in active agricultural fields. For the eight ECS crossings in wooded or hedgerow areas, Stony Creek will keep the crossing as perpendicular to the stream bank practicable so as to minimize unnecessary solar heating of the stream from cleared vegetation. Also, for these crossings, to the extent practicable, Stony Creek will leave tree stumps in place along the stream bank to prevent erosion and stream bank disturbance.

- Stormwater Protection. When performing construction in the vicinity of DEC-protected streams, Stony Creek will install and maintain the silt fences and other appropriate measures to prevent silt and turbid water from entering the stream from construction areas.

- Prevention of Drainage from the Trench into the Stream. To prevent water from the ECS cable trench from entering into the DEC-protected stream, before Stony Creek trenches through a stream bank, it will backfill or plug the upland portion of the ECS cable trench to prevent water from collecting in the trench and potentially draining into the streambed.

- Timely Construction. Stony Creek shall complete ECS crossings of DEC-protected streams as one operation without unnecessary delays in different phases of construction.

Two of the ECS circuit crossings are crossings of Crow Creek tributaries that are potential breeding streams for wild brook trout. For these crossing, Stony Creek will employ the mitigations measures listed above, plus it will ensure that no work is done in these streambeds in the winter months from October 1 through May 31 when the brook trout could be spawning.

4.16.3 Access Road Impacts to Streams

Stony Creek has routed the Project access roads to minimize stream crossings to the extent practicable. Table 23 lists the locations where access roads will need to cross DEC-identified streams; five of these crossings are over DEC-protected streams.

Table 23. Access Road Stream Crossings

Turbines Served	Public Road Entrance	Stream Crossed	DEC Class	Wetland ID	Road Type	Notes
DEC-Protected Streams						
T-53	Centerline Road	Stony Brook – trib	A	W-3	Crane	Crossing is in an open hayfield
T-52, 53	Centerline Road	Stony Brook – trib	A	W-3	Crane	Crossing is in an open hayfield
T-37, 38	Centerline Road	Tonawanda Creek – trib	A	W-74	Standard	Replacing an existing farm lane crossing
T-49	Centerline Road	Tonawanda Creek – trib	A	W-2	Standard	Crossing is in an open hayfield
T-40	Snyder Road	Tonawanda Creek – trib	A	W-92	Standard	Scrub area
Un-Protected Streams						
T-30, 31	Route 20A	Stony Creek – trib	C	W-257	Crane	Replacing an existing farm lane crossing

Access road impacts to streams will be limited by the fact that the crossings are located in areas of low bank relief, where streams run intermittently, or where an existing farm lane crosses a stream. In addition to locating these crossings in areas where impacts will be minimal, Stony Creek will minimize temporary and permanent impacts to streams by employing the following mitigation measures:

- Culvert Sizing. In locations where access roads cross DEC-protected streams, Stony Creek will install culverts to maintain stream flow under the access road. Stony Creek will size the culverts to accommodate the flow for a 25-year design storm, or it will construct an overflow spillway that will direct the water immediately back to the stream.

- Culvert Installation Depth. In locations where access roads cross DEC-protected streams, Stony Creek will install culverts a minimum of 1 foot below the elevation of the streambed.

- Dry Stream Beds. When installing a culvert across a DEC-protected stream, Stony Creek will ensure the streambed is dry when construction activities are taking place. Two of the stream crossings listed in Table 23 may be intermittent streams with no flow during the period when construction is taking place. If a stream does contain flow when construction needs to occur, then Stony Creek will temporarily dam flow upstream before conducting construction activities in the stream bed.

- Erosion Protection. When installing permanent culverts in DEC-protected streams, Stony Creek will install a rocked headwall and a downstream splash apron to prevent erosion. Stony Creek will use an even mix of rock sizes from 6 to 18 inches in diameter.

- Stormwater Protection. When performing construction in the vicinity of DEC-protected streams, Stony Creek will install and maintain the silt fences and other appropriate measures to prevent silt and turbid water from entering the stream from construction areas.

- Timely Construction. Stony Creek shall complete ECS crossings of DEC-protected streams as one operation without unnecessary delays in different phases of construction.

Three of the stream crossings are planned to be crane roads where the width of the travel lane will be approximately 30 feet wide. The extra width of crane roads is offset by the fact that one of these is a replacement of an existing crossing of an un-protected stream, and the fact that the other two crossings are in an area where the stream appears to be an intermittent stream in a hayfield. Neither of these crossings will result in a significant impact to the existing streams.

4.17 Post-Construction Bird and Bat Studies from New York Wind Farms

4.17.1 High Sheldon Wind Farm – Interim 2010 Results

Sheldon Energy hired Western Eco Systems Technology, Inc ("WEST") to perform the post-construction bird and bat studies in accordance with a plan developed by Sheldon Energy and NYSDEC . The study protocol involves daily searches at 8 turbines and weekly searches at 17 turbines conducted over the period starting April 15, 2010 through October 15, 2010.

As of the date of this FEIS, studies are still underway, but interim results have been documented for the first three months of the studies. The interim study report is provided in FEIS Appendix A.4.c.

During the standardized searches conducted in the first three months of the survey period, WEST found 13 birds and 11 bats. None of the species found were federal or state-listed species.

Table 24 and Table 25 list the fatalities found during the Sheldon studies and include a preliminary estimate of fatality rates for the High Sheldon Wind Farm. The preliminary results indicate a bird fatality rate of 1.7 birds/turbine/year (0.5 b/t/yr large birds and 1.2 b/t/yr small birds) and a bat fatality rate of 2.1 bats/turbine/yr.[16]

Table 24. High Sheldon Wind Farm - Preliminary 2010 Results from Daily Searched Turbines

Turbine	Location	Large Bird Fatalities	Small Bird Fatalities	Bat Fatalities
C1	French Rd	None	None	None
E1	Perry Rd	1 rock pigeon	None	1 hoary bat
E8	Route 77	None	3 passerines	1 hoary bat 1 silver-haired bat
G1	Centerline Rd	None	None	1 silver-haired bat
H4	Bartz Rd	None	None	1 silver-haired bat
I6	N. Sheldon Rd	1 turkey vulture	None	1 silver-haired bat
J6	Route 20A	None	None	None
7 turbines	TOTAL	2 birds	5 birds	6 bats
	Find Rate	0.29 birds/WTG	0.43 birds/WTG	0.86 bats/WTG
	Detection Rate	96.9%	58.1%	54.5%
	Fatality Rate	0.29 birds/WTG/3 mo	0.74 birds/WTG/3 mo	1.57 bats/WTG/3 mo
	% of Season	50%	50%	50%
Projected Annual Rate		0.59 birds/WTG/yr	1.48 birds/WTG/yr	3.15 bats/WTG/yr

See notes below Table 25.

[16] These are preliminary results prepared for this FEIS using only the data from the spring through mid-summer 2010; final fatality results based on data collected throughout spring, summer, and fall 2010, will be calculated by WEST and reported in the annual report to be issued in early 2011. Results are calculated by averaging the values calculated in Table 24 and Table 25.

Table 25. High Sheldon Wind Farm - Preliminary 2010 Results from Weekly Searched Turbines

Turbine	Location	Large Bird Fatalities	Small Bird Fatalities	Bat Fatalities
A2	Maxon Rd	None	1 yellow-bellied flycatcher	None
B1	Thomas Rd.	None	None	None
D4	Schwab Rd	None	None	None
D5	Schwab Rd	1 crow 1 large bird	None	None
E3	Perry Rd	None	None	None
E9	Route 77	None	None	None
F2	Route 77	None	None	None
F4	Route 77	1 sharp-shinned hawk	None	2 silver-haired bat
G7	Route 77	None	None	None
H1	Bartz Rd	None	None	None
H9	Centerline Rd	None	None	1 hoary bat
I2	N. Sheldon Rd	None	None	None
I4	N. Sheldon Rd	1 turkey vulture	1 killdeer 1 passerine	None
J3	N. Sheldon Rd	None	None	1 hoary bat
J7	Route 20A	None	1 unidentified	None
J10	Burrough Rd	None	None	1 hoary bat
L1	N. Sheldon Rd	None	None	None
17 turbines	TOTAL	4 birds	4 birds	5 bats
	Find Rate	0.24 birds/WTG	0.40 birds/WTG	0.54 bats/WTG
	Detection Rate	96.9%	58.1%	54.5%
	Fatality Rate	0.29 birds/WTG/3 mo	0.74 birds/WTG/3 mo	1.57 bats/WTG/3 mo
	% of Season	50%	50%	50%
Projected Annual Rate		0.49 birds/WTG/yr	0.81 birds/WTG/yr	1.08 bats/WTG/yr

Notes for Table 24 and See notes below Table 25.

Table 25:

1. Data is from the "Interim Report – High Sheldon Wind Farm Avian and Bat Monitoring Plan, April 15-July 15, 2010," by WEST, issued August 21, 2010.

2 Detection rates are from searcher efficiency tests performed in the first three months of surveys at the High Sheldon Wind Farm

3. % of season is assumed to be 50% because the data includes results from 3 months of searches to be done over a total search period of 6 months. Results assume no fatalities will occur during the winter months.

4.17.2 Threatened and Endangered Species Mortality and New York Wind Farms

As shown in Table 26, no threatened or endangered bird or bat species have been killed at operating wind farms in New York or Wyoming County. From 10 studies conducted at six large scale wind farms there have been six bird fatalities noted of species that are on New York's list of special concern, but no endangered or threatened species. These studies support the conclusion that Stony Creek will have no impact on federal or New York-listed threatened and endangered species and low to no impact on species of special concern.

Table 26. Summary of Bird and Bat T&E and Species of Concern Fatalities at Operating New York Wind Farms

Wind Farm	Study Year	Federally-Listed T&E Species	New York-listed T&E Species	New York Species of Concern
Maple Ridge (Lewis Co.)	2006	None	None	None
"	2007	None	None	1 Sharp-shinned Hawk
"	2008	None	None	1 Sharp-shinned Hawk 1 Cooper's Hawk
Munnsville Madison Co.	2008	None	None	None
Ellenburg (Clinton Co.)	2008	None	None	1 Sharp-shinned Hawk
"	2009	None	None	None
Bliss (Wyoming Co.)	2008	None	None	1 Sharp-shinned Hawk
"	2009	None	None	None
Cohocton (Steuben Co.)	2009	None	None	1 Sharp-shinned Hawk

Note: Results are shown for New York post-construction studies where complete reports are available as of January 2011. As of this date, reports are not available for studies done in 2010.

4.17.3 Raptor Mortality at New York Wind Farms

Table 27 lists raptor fatalities documented in post-construction studies conducted at operating wind farms in New York State. Table 27 also summarizes results of pre-construction raptor surveys that were done at these wind farms.

Table 27. Raptor Observation and Fatality Rates at Operating New York Wind Farms

Wind Farm, County	Year of Pre-Constr. Survey	Pre-Construction Passage Rate	Pre-Construction Observations on Raptor Flight Heights	Year of Post-Constr. Survey	Raptor Fatalities Rate, birds/WTG/yr (see notes)
Stony Creek Wyoming Co.	2008	0.7 birds/hr	94% below WTG tip height	n/a	Na
Wethersfield (Noble) Wyoming Co.	2006	9.7 birds/hr	~27% below WTG tip height (excludes birds that were judged to be local, and not migrating)	2010	Na
Wethersfield Wyoming Co.	1998	2.4 birds/hr	~85% below WTG tip height. (Fig 6, Magee and Cooper)	2010	Na
Bliss Wyoming Co.	2005	0.9 birds/hr	Not calculated	2008	0.28
High Sheldon Wyoming Co.		3.2 birds/hr	No specific statistics available. Most above 328 ft, but several at 98-164 ft.	2010	0.50
Maple Ridge Lewis Co.	1998	8.1 birds/hr	~90% below WTG tip height. (Fig 6, Magee and Cooper)	2006 2007 2008	0.10
Munnsville Madison Co.	2005	Na	78% below WTG tip height (this figure is from studies conducted one hill to the east of Munnsville, for the "West Hill" project. Reported in NYSDEC summary table.)	2008	0.44
Clinton Clinton Co.	2005	0.0 birds/hr	NA – no raptors observed in 12 days of surveys	2008	0.43
Ellenburg Clinton Co.	2005	0.0 birds/hr	NA – no raptors observed in 12 days of surveys	2008	0.72
Cohocton Steuben Co.	2004, 2005	3.3 birds/hr	80% below WTG tip height	2009	0.24

Notes:

1. Unless noted otherwise, pre-construction passage rates and altitudes are from data compiled by NYS NYSDEC and available at http://www.dec.ny.gov/energy/40966.html. References below are those sited in the NYSDEC table.

- Pre-construction passage rates shown in this table are the mean raptor passage rate. When separate rates are reported for spring and fall surveys, this table is showing the highest rate recorded.

2. Stony Creek References:

- Stantec, 2009. "Spring 2008 bat and bird migration survey report – acoustic bat and diurnal raptor surveys at Stony Creek Wind Farm, Wyoming County, New York." Unpublished report submitted to Invenergy Wind Development LLC, Rockville, MD.
- Stantec. 2009. "Summer and fall 2008 acoustic bat and raptor survey report for the Stony creek Wind Farm in New York." Unpublished report submitted to Invenergy Wind Development LLC, Rockville, MD.

3. Sheldon References are:

- Tetra Tech 2009. "Diurnal Migrating Bird Survey Report, High Sheldon Wind Farm, Wyoming County, New York," prepared for Invenergy Wind LLC, Olney, MD, January 2009.

Raptor fatality rates are from FEIS Table 24 and FEIS Table 25.

4. Maple Ridge References are:

- Cooper, B., and T. Mabee. 1999. "Bird migration near proposed sites at Wethersfield and Harrisburg, New York." Unpublished report prepared for Niagara-Mohawk Power Corp., Syracuse, NY by ABR, Inc., Forest Grove, OR. Provided with Appendix S of the Maple Ridge FEIS. Figure 6 shows raptor flight heights. Table 2 (page 15) shows passage rates.
- Jain, A., P. Kerlinger, R. Curry, and L. Slobodnik. 2007. Annual Report for the Maple Ridge Wind Power Project Postconstruction Bird and Bat Fatality Study – 2006 FINAL REPORT June 25, 2007. Prepared for PPM Energy and Horizon Energy and Technical Advisory Committee (TAC for the Maple Ridge Project Study).
- Jain, A., P. Kerlinger, R. Curry, and L. Slobodnik. 2008. Annual Report for the Maple Ridge Wind Power Project Postconstruction Bird and Bat Fatality Study – 2007 (May 2, 2008). Prepared for PPM Energy and Horizon Energy and Technical Advisory Committee (TAC for the Maple Ridge Project Study).
- Jain, A., and P. Kerlinger, R. Curry, L. Slobodnik, and M. Lehman. 2009a. Annual Report for the Maple Ridge Wind Power Project Postconstruction Bird and Bat Fatality Study – 2008 (May 14, 2009).
- The fatality rate reported in this table is the highest rate for "large" birds that was estimated over three years of studies. The data for each year was:
    - 0.08 b/t/yr in 2008 (Table 16 in report),
    - 0.08 b/t/yr in 2007 (Table 18 in report), and
    - 0.11 b/t/yr in 2006 (Table 20 of the report, 13 estimated total fatalities divided by 120 turbines).

4. Munnsville References are:

- Woodlot Alternatives, Inc. 2005a. "A Spring 2005 Radar, Visual, and Acoustic Survey of Bird and Bat Migration at the Proposed Munnsville Wind Project in Munnsville, New York." Prepared for AES-EHN NY Wind, LLC.
- Woodlot Alternatives, Inc. 2005b. "Summer and Fall 2005 Bird and Bat Surveys at the Proposed Munnsville Wind Project in Munnsville, New York." Prepared for AES-EHN NY Wind, LLC.
- Stantec Consulting. 2009. "Post-construction monitoring at the Munnsville Wind Farm, New York, 2008." Prepared for E.ON Climate and Renewables.
- The Munnsville post-construction study for 2008 does not calculate a separate fatality rate for raptors. It reports and overall avian fatality rate between 1.7 and 2.2 birds/turbine/year (depending on whether weekly or daily results are used). As explained in the Munnsville post-construction report, a total of 10 birds were found, and two of these were raptors (red-tailed hawks). Thus, raptors represented 20% of the finds. The rate shown in the table is 20% of the highest reported rate (2.2) for all birds.

5. Noble Clinton, Ellenburg, and Bliss References are:

- New York State Department of Environmental Conservation. 2008. Publicly Available Raptor Migration Data for Proposed Wind Sites in NYS. Available at http://www.dec.ny.gov/docs/wildlife_pdf/raptorwinsum. Accessed November 7, 2008.
- Jain, A., P. Kerlinger, R. Curry, L. Slobodnik, J. Histed, and J. Meacham. 2009b. Annual Report for the Noble Clinton Windpark, LLC. Postconstruction Bird and Bat Fatality Study – 2008. Prepared by Curry and Kerlinger, LLC.
- Jain, A., P. Kerlinger, R. Curry, L. Slobodnik, A. Fuerst, and C. Hansen. 2009c. Annual Report for the Noble Ellenburg Windpark, LLC. Postconstruction Bird and Bat Fatality Study – 2008. Prepared by Curry and Kerlinger, LLC.

- Jain, A., P. Kerlinger, R. Curry, L. Slobodnik, J. Quant, D. Pursell. 2009d. Annual Report for the Noble Bliss Windpark, LLC. Postconstruction Bird and Bat Fatality Study – 2008. Prepared by Curry and Kerlinger, LLC.
- For Bliss, the raptor fatality is calculated using total fatalities estimated by species in the post-construction monitoring reports. These rates are:
    - 0.28 b/t/yr for 2008 studies. Based on highest of estimate of total raptor fatalities. (Table 23 of report, calculated as 19 Sharp-shinned hawks/67 turbines)
    - 0.28 b/t/yr for 2009 studies. Based on highest of estimate of total raptor fatalities. (Table 23 of report, calculated as 19 Red-tailed hawks/67 turbines)
- For Ellenburg, the raptor fatality is calculated using total fatalities estimated by species in the post-construction monitoring reports. These rates are:
    - 0.48 b/t/yr for 2008 studies. Based on highest of estimate of total raptor fatalities. (Table 27 of report, calculated as 26 Broad-winged hawks/54 turbines)
    - 0.72 b/t/yr for 2009 studies. Based on highest of estimate of total raptor fatalities. (Table 22 of report, calculated as 39 Red-tailed hawks/54 turbines)

6. Cohocton reference is:

- Stantec Consulting. 2010. Cohocton and Dutch Hill Wind Farms Year 1 Post-Construction Monitoring Report, 2009 for the Cohocton and Dutch Hill Wind Farms In Cohocton, New York. Prepared for Canandaigua Power Partners, LLC and Canandaigua Power Partners II, LLC.
- The Cohocton post-construction study does not calculate a separate fatality rate for raptors. It reports a fatality rate between 2.9 and 4.7 birds/turbine/year (depending on whether weekly or daily results are used). As explained in Section 2.2.2 of the Cohocton post-construction report, a total of 18 birds were found, and one of these was a raptor. Thus, raptors represented 5% of the finds. The rate shown in the table is 5% of the highest reported rate (4.7) for all birds.

7. Wethersfield Noble references are:

- Ecology and Environment, Inc. 2007. Bird and Bat Risk Assessment Noble Wethersfield Windpark Towns of Wethersfield and Eagle, Wyoming County, New York. Prepared for Noble Environmental Power, LLC.

4.18 Post-Construction Noise Measurements from High Sheldon Wind Farm

Several of the comments made regarding the adequacy of pre-construction noise modeling summarized in the Stony Creek DEIS are addressed by comparing results of pre-construction and post-construction noise studies performed at the High Sheldon Wind Farm, a 75-turbine wind farm developed and operated by Invenergy in the Town of Sheldon. The Sheldon wind turbines are GE 1.5sle turbines that achieved full commercial operation in March 2009. As demonstrated by the post-construction study, the modeling used in the DEIS's for both projects accurately predicted noise levels; if anything, the predictions were overly conservative.

Pre-Construction Noise Study at Sheldon

The DEIS Noise Study for the Stony Creek Wind Farm is based on a CADNA noise model that is similar to the noise model used in a pre-construction noise analysis performed for the High Sheldon Wind Farm. The Sheldon pre-construction noise study assumed the turbines had a maximum sound power level of 104 dBA, which is consistent with manufacturer's specifications and testing for the turbines that were used at the High Sheldon Wind Farm. For both Sheldon and Stony Creek, the CADNA noise modeling software was used to develop several important estimates, including contour maps showing maximum noise levels and tables showing noise levels expected at different wind speeds.

Figure 5 is an extract from the Sheldon pre-construction noise study. It shows the CADNA-predicted turbine noise contours at various distances away from a bank of five turbines operating at maximum noise levels. As shown in Figure 5, at 800 feet the CADNA model predicted turbine-only noise levels would be 50 dBA.

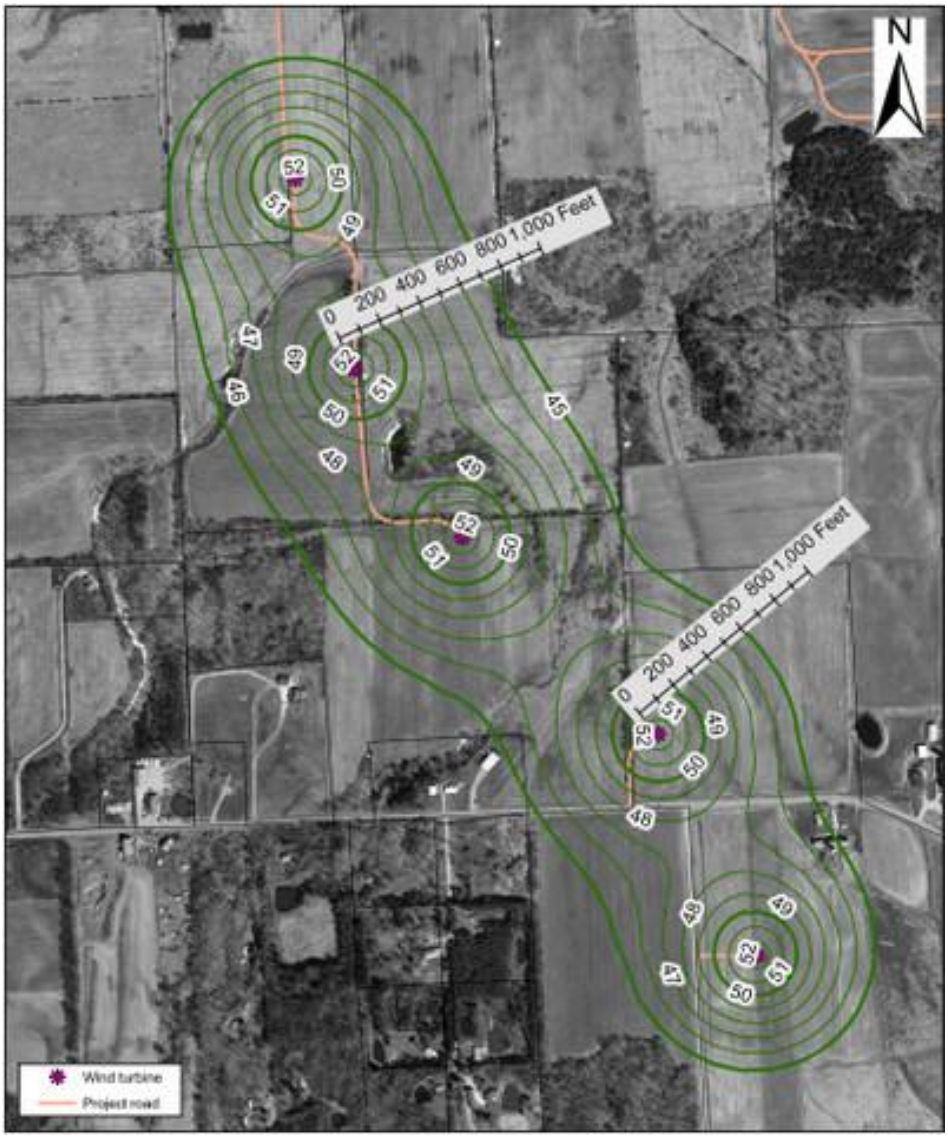


Figure 5. Predicted Sheldon Turbine Noise Emissions

Post-Construction Noise Study at Sheldon

In April 2009, one month after the High Sheldon Wind Farm began commercial operation, Michael Theriault Acoustics, Inc. conducted post-construction noise measurements with the goal of checking that the CADNA pre-construction noise estimates were accurate and that the project was operating in compliance with local regulations and permits.

The Sheldon post-construction noise survey measured total noise levels, i.e., noises that include both noise from the ambient environment and noise from the wind turbines. Specifics on the design and conduct of the Sheldon post-construction noise study are given in the study report. Overall, the post-construction noise survey found that (i) pre-construction studies predicting turbine noise emissions were realistic estimates of the actual turbine noise emissions, and (ii) the Sheldon turbines were operating within the permit requirement of 50 dBA at 800 ft from the turbine base.

Figure 6 shows total noise levels measured in Sheldon at a location 800 feet downwind from a group of wind turbines operating at hub height wind speeds of 8 m/sec to 10 m/sec.[17] Note that these are L90 measurements of total sound – they include sound from both the turbines and from the ambient environment. Noise from the turbines only would be less than what is shown in Figure 6. As shown in Figure 6, the total noise measurements varied between about 44 and 49 dBA, with all measurements being less than 50 dBA. If ambient noise were separated out of these total noise measurements, the turbine only noise would be less.

[17] Wind speeds were determined from data collected an anemometer mounted on the nacelle of one of the wind turbine closest to the noise monitoring station.

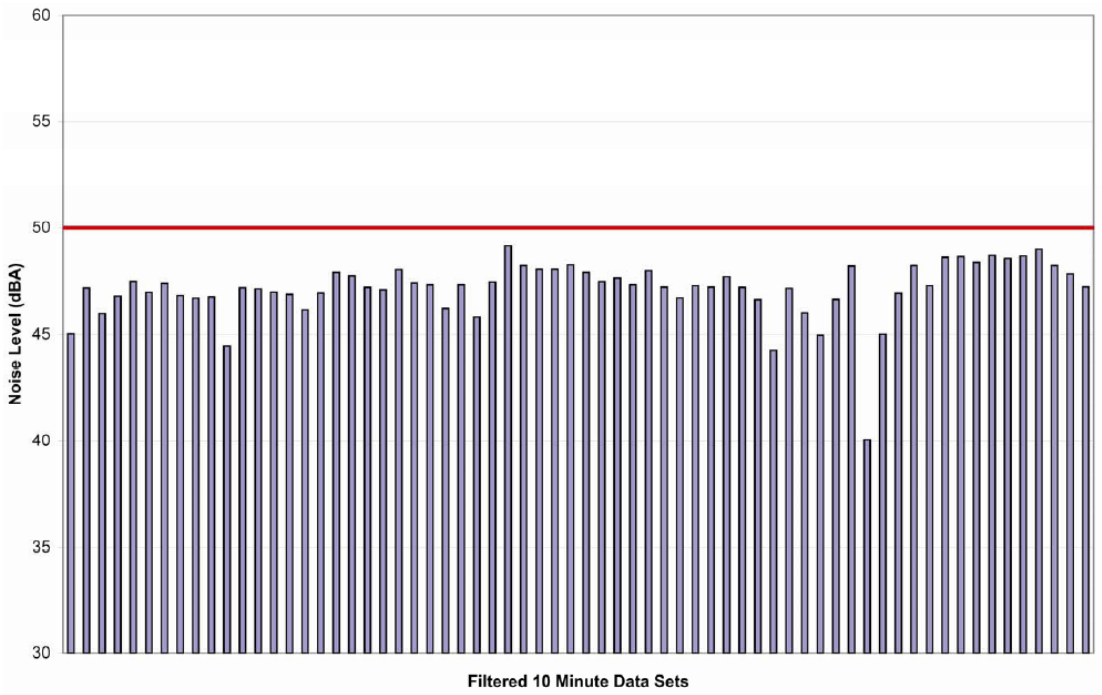


Figure 6. Measurements of Total L90 Noise Levels 800 ft Downwind of Sheldon Turbines

Measurements were also performed at a location 1,500 feet downwind of the Sheldon wind turbines. Figure 7 shows total noise levels measured in Sheldon at a location 1500 feet downwind from a group of wind turbines operating at hub height wind speeds of 8 m/sec to 10 m/sec. Fewer data points were collected for this point due to a loss of battery power. The data show total L90 noise levels (turbine plus ambient) that varied between 42 and 45 dBA.

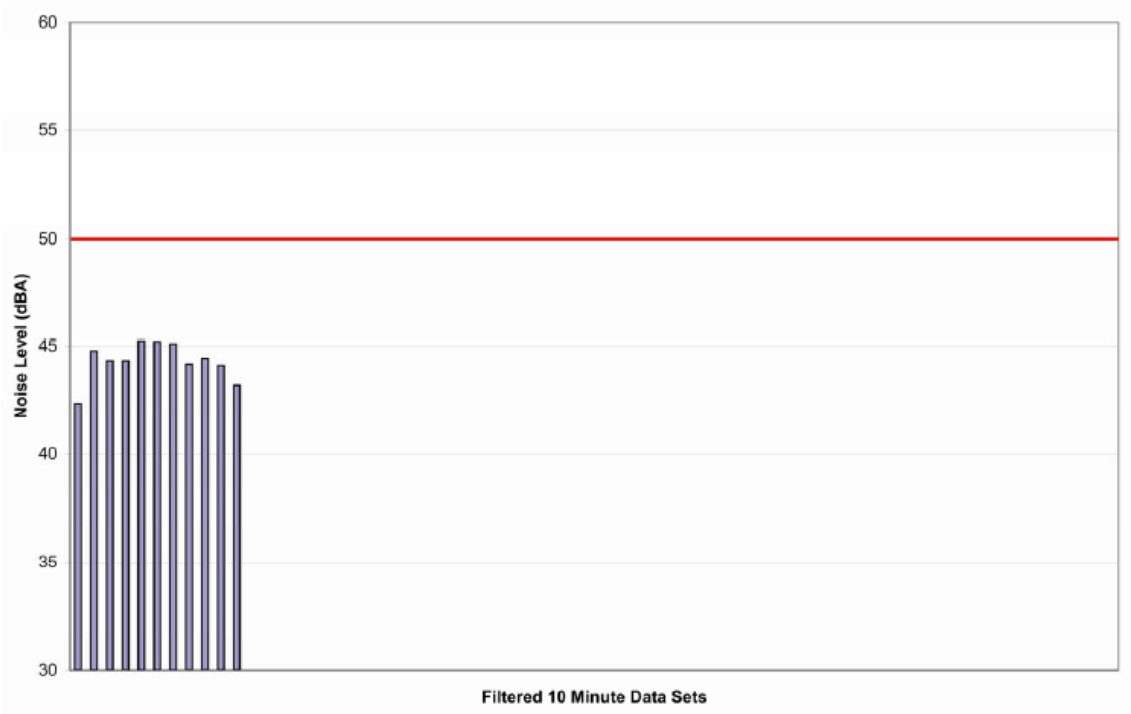


Figure 7. Measurements of Total L90 Noise Levels 1,500 ft Downwind of Sheldon Turbines

Comparison of Predicted and Measured Noise Levels

Table 28 compares the pre-construction and post-construction noise levels from Sheldon. It is evident that the pre-construction CADNA models predicted maximum noise levels that bounded the actual noise emission from the wind turbines installed in Sheldon. In fact, the pre-construction model appears to over-predict maximum turbine-only noise emissions by 1 dBA to 6 dBA, or more depending on the influence of ambient sound levels in the total measurements taken in Sheldon.

Table 28. Pre- and Post- Construction Noise Levels at High Sheldon Wind Farm

Description	800 ft from Turbine Tower	1,500 ft from Turbine Tower
Pre-Construction CADNA Predictions, L90 Noise Level. TURBINE NOISE ONLY.	50 dBA	46.5 dBA
Post-Construction Measurements, L90 Noise Level. TOTAL NOISE (TURBINE + AMBIENT)	44-49 dBA	42-45 dBA

4.19 Decommissioning

The Decommissioning Plan was provided in the DEIS but has since been revised. The new Decommissioning Plan is provided in Appendix 3G. A bond or other form of financial security will beprovided by, and finalized with the Project Sponsor.

4.20 Technical Review of New Analyses and Information

Since the completion of the DEIS, Stony Creek has made adjustments to the proposed Project, which resulted from comments received to the DEIS, as well as studies completed to minimize the environmental impact of the Project. Compared to the DEIS layout, the FEIS layout has eleven turbines that were relocated to different portions of the Project Area and minor adjustments to the locations to the remaining turbines, primarily designed to reduce impacts to wetlands. In addition, Stony Creek is now proposing to install the GE 1.6–100 turbine instead of the GE 1.5 XLE and/or GE 1.6XLE turbine models that were assessed in the DEIS. In the DEIS, environmental impacts were evaluated using the GE 1.6 XLE turbine.

The GE.1.6-100 turbine is the same wind turbine as those identified and assessed in the DEIS with some changes:

- The 1.6-100 has longer blades (50 meters vs. 41.25 meters);
- The 1.6-100 is more efficient and can generate more electricity at a wider range of wind speeds; and
- The 1.6-100 turbine model has a lower sound power emission rating than the 1.6-XLE, therefore, noise impacts will be slightly reduced.

Given the changes in the turbine model and locations, along with the need to accurately respond to comments from the public and various state and federal agencies, some of the environmental analyses contained in the DEIS were re-evaluated by Stony Creek to assess if there are any new potentially significant adverse environmental impacts of the Project that were not addressed in the DEIS. New analyses of the following environmental impacts were conducted during the preparation of the FEIS:

- Detailed wetland delineations;
- Jefferson Salamander Surveys;
- Updated Noise Analysis;
- Shadow Flicker Analysis; and
- Visual Impact Analysis.

The detailed analysis resulted in some layout changes in order to minimize the environmental impacts of the project. Additionally, some of the new analyses were required to determine if the changes in the turbine model and locations result in additional mitigation to wetland impacts, minimization of known breeding pools for Jefferson salamander, minimization of

fragmentation of forests and agricultural fields, and confirm that shadow flicker and noise levels remain in conformance with Town Law requirements.

Many of the anticipated environmental impacts of the Project remain unchanged by the alteration in layout and/or turbine model, including, but not limited to soils, avian, land use and groundwater resources. For the environmental impacts that are layout specific, Stantec reviewed the results of each study and evaluated the resulting impacts against those environmental impacts stated in the DEIS to assess whether the changes resulted in significant adverse environmental impacts not addressed in the DEIS. A "turbine by turbine" analysis of the following environmental impacts was conducted:

Table 29 Analysis of Environmental Impacts due to Project Changes

Area	Analysis
Streams/ Wetlands	Determined whether the turbines moved into wetlands/wetland buffer or if the move entails additional stream crossings.
Forest Impacts	Determined whether the move placed turbines into a forest habitat, or reduced forest impacts.
T&E Species	Determined whether the move results in placement of the turbines within 100' of identified Jefferson Salamander habitat.
Noise	Additional noise simulation modeling was required based on the results of the previous study, location of receptors, distance and direction of proposed change.
Shadow flicker	Additional simulation was required based on review of the previous study, location of receptors, distance and direction of proposed change.
Visual	Determined whether additional simulation was required based on review of previous study, location of receptors, distance and direction of proposed change.
Cultural Resources	Determined whether additional simulation is required based on review of viewshed map from previous study, location of receptors, distance and direction of proposed change.
Public Roads	Determined whether the move involves the use of public roads not previously analyzed.
Electromagnetic Interference	Determined whether the move is greater than 1 mile toward identified microwave beam paths.

Stantec determined that the changes in the turbine model and re-locations result in the following impacts compared to those identified in the DEIS:

- Impacts to wetlands are less given that turbines were pulled out of jurisdictional wetlands and wetland buffer areas;
- No additional stream crossings will occur;
- Forest impacts are reduced given that some turbines are being removed from forested areas and forest edges;
- Known Jefferson Salamander breeding pools are being avoided;
- Noise impacts are slightly less than originally determined given that the 1.6-100 turbine is slightly quieter than the 1.6 XLE model, and that relocated turbines are being placed further away from residences;
- Shadow Flicker is still within Town requirements, turbines have been moved further away from non-participating residences;
- Visual impacts remain the same as those identified in the DEIS;
- The Viewshed Map is unchanged;
- No new public roads will be used during the construction and operational phases of the project; and
- The changes do not infringe on any identified microwave beam paths.

Changes to some of the turbine locations were made both in response to the public input and DEC's changes in wetland and related buffer areas. Layout changes were made to further reduce impacts, as intended by the SEQRA process. The resulting environmental impacts from these changes are less than and/or the same as those environmental impacts evaluated in the DEIS. Consequently, Stantec determined with input from the Lead Agency the minor changes in layout and the new turbine model did not result in any new significant adverse impacts that were not adequately addressed in the DEIS. On the contrary, the revised layout resulted from the comments received during the public comment period.

5 Summary of Mitigation Measures

5.1 Wetlands and Streams

5.1.1 Design Mitigations

Design to Minimize Stream Impacts. Stony Creek will construct the Project to avoid and/or minimize permanent impacts to streams and wetlands to the maximum extent practicable and in accordance with all permits on wetlands and stream crossings that may be issued by the U.S. Army Corps of Engineers and the New York DEC. (FEIS Section 6.6.2) Access roads and ECS will be located away from State-protected streams where practicable. (DEIS Section 3.5.1)

Wetland Mitigation. If the USACE determines that the temporary or permanent impacts from the Stony Creek require compensatory wetlands be built or protected as a mitigation measure, then Stony Creek will provide wetland mitigation areas in consultation with the USACE. (FEIS Section 3.12)

Wetland Laws. Stony Creek will build and operate the Project in compliance with all applicable state and federal laws on wetland protection, including those laws that are enforced by the US Army Corps of Engineers and the NY State Department of Environmental Conservation. (FEIS Section 6.12.13)

Wetland Permits. Stony Creek will complete the formal wetland impact review with the NYSDEC and USACE prior to construction and will construct the Project in compliance with the terms and conditions of the permits obtained as a result of that regulatory review. (DEIS Section 7.2)

5.1.2 WTG Assembly Area Near Wetlands and Streams

WTG Assembly Areas Near Wetlands. For the WTG near wetlands, Stony Creek will modify the WTG worksites to not be circular, to be smaller if necessary, and to avoid nearby wetlands. (DEIS Section 3.4.2, DEIS Section 1.4.4)

Assembly Areas for T-37 and T-39. To construct the wind turbines T-37 and T-39, Stony Creek will modify the wind turbine assembly area so that there are no direct impacts to the DEC-protected streams and stream beds that are near these turbine sites. As part of preparation of the wind turbine assembly areas for these turbines, Stony Creek will install temporary fencing around the banks and wetland areas surrounding these streams, and construction monitors will ensure that no traffic enters the areas that are marked by the temporary fencing. (FEIS Section 3.13)

Temporary Fencing. For those locations where wetlands are within 165 feet of a wind turbine location, during construction of the Project Stony Creek will install temporary fencing around

these wetlands to prevent traffic from impacting the wetland during assembly of the wind turbine and its foundation. (FEIS Section 3.12)

5.1.3 Road Installation Across Wetlands and Streams

Culvert Installations. For locations where an access road is constructed over a stream, Stony Creek will install a culvert in the streambed with appropriate gravel fill on each side of the culvert. Stony Creek will also install culverts at wetland crossings where significant cross-drainage is evident. (FEIS Section 3.12, DEIS Section 3.4.1)

To mitigate impacts to streams, to the extent practicable, Stony Creek will adjust routes of roads and ECS cables to minimize stream crossings. Where roads must cross streams, Stony Creek will install plastic or metal culverts. Culverts will be sized to maintain the flow capacity of the channel for a 25-year design storm. To maintain the channel integrity to existing conditions the culvert base will be buried to allow for a gravel/sediment stream bottom that maintains the existing elevations. (DEIS Section 3.4.1)

Details for Access Road Crossings of Streams. At locations where access roads cross DEC-protected streams, Stony Creek will employ the mitigation measures listed in FEIS Section 3.13 regarding culvert sizing, culvert installation depth, dry stream beds, erosion protection, stormwater protection, and timely construction. (FEIS Section 3.13)

Road Crossings at Narrow Points. Where roads must cross wetland areas, Stony Creek will minimize impacts by routing the road along existing roads through the wetlands, if any, or crossing the wetland at road at a narrow point in the wetland. (DEIS Section 3.4.2)

Width Reduction of Crane Roads Crossing Streams. At the locations where crane roads cross streams, Stony Creek will not reduce the road width after construction, unless the “stream” is an intermittent water way in an area that is active used for agriculture. (FEIS Section 6.12.8)

Crane Mats. Where cranes may need to cross a wetland area, Stony Creek will minimize impacts by using crane mats. (DEIS Section 3.4.2)

Tracked Equipment. To minimize potential for rutting in wetland areas, Stony Creek will use tracked bulldozers and excavators for construction of access roads in wetland areas, and cranes will not cross wetland areas except when roads have been constructed through the area. (FEIS Section 3.12, DEIS Section 3.4.2)

Vehicle Crossings of Running Streams. During construction Stony Creek will not drive heavy vehicles through free-running streams. (DEIS Section 3.4.1)

5.1.4 ECS Installation Across Streams and Wetlands

Details for ECS Stream Crossings. To mitigate the temporary impacts of ECS stream crossings, Stony Creek will employ the mitigation measures described in FEIS Section 3.13 regarding dry stream beds, wooded banks, stormwater protection, prevention of drainage into the stream, and timely construction. (FEIS Section 3.13)

ECS Crossings of Flowing Streams. Stony Creek will not install ECS cables across streams at times when streams have noticeable water flow. For locations where ECS must cross a stream that has water flow during construction, Stony Creek will either use a directional bore, short spans of aboveground cables, or other methods for construction approved by the NYSDEC or the USACE. (DEIS Section 3.4.1)

Cable Plows for Open Field Wetlands. For areas where Stony Creek will install an ECS cable through a wetland in an open agricultural field, pasture, or area of scrub shrub, Stony Creek will perform the installation using a cable plow. (FEIS Section 3.12, DEIS Section 3.4.2)

Directional Bores. In some situations where full avoidance of a wetland or stream is not practicable, Stony Creek will install the ECS circuit using a directional bore to go under the wetland or stream area with no surface disturbance. (FEIS Section 3.12, DEIS Section 3.4.2)

Bore Under NYSDEC Wetland at Snyder Road. For the portion of the ECS circuit near the Snyder and Buffalo Roads that crosses through a NYSDEC wetland Stony Creek will perform the installation using a directional bore. (FEIS Section 3.12)

Wild Brook Trout Stream. For the location where an ECS circuit is planned to cross a Crow Creek tributary that is a potential breeding stream for wild brook trout, Stony Creek will ensure that no work is done in this streambed in the winter months from October 1 through May 31 when the brook trout could be spawning. (FEIS Section 3.13)

5.1.5 Wetland and Stream Restoration

Wetland Restoration. If wetland areas are impacted during construction, as part of restoration activities, Stony Creek will restore the pre-construction conditions to the extent practicable. (DEIS Section 3.4.2)

Restoration of Stream Banks. Stream banks disturbed during access road installation will be restored to original grades and contours and stabilized by seeding and/or mulching. (FEIS Section 3.12)

5.2 Turbine Selection

Noise and Other Specifications. Stony Creek will use the GE 1.6-100 wind turbine model. Tip height of the wind turbine shall be 430 feet or less, and hub height of the wind turbine shall be 263 ft or less. (FEIS Section 4.1)

Non-Reflective Paint. Stony Creek will use WTG that are painted with a non-reflective paint to minimize reflected glare. (DEIS Section 3.8.9)

5.3 Water Protection

To mitigate against potential spill hazards from oil, during construction and operation of the Project Stony Creek will implement an Spill Prevention Control and Countermeasures ("SPCC") plan that complies with NYSDEC and U.S. EPA requirements. (DEIS Section 3.4.1)

5.4 Stormwater and Erosion and Control Measures

DEC Stormwater Permit. Prior to beginning construction, Stony Creek will prepare a SWPPP in accordance with GP-0-10-001, or the regulations that are in effect at that time. This SWPPP will include both construction and post-construction features. Stony Creek will submit its SWPPP, and a Notice of intent, to the NYSDEC. (FEIS Section 6.8.11) Stony Creek will follow the erosion and sedimentation measures detailed in the SWPPP prepared for the SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-08-001). (DEIS Section 3.3)

Flood Events. Stony Creek will build and operate the Project in accordance with a stormwater management plan that will consider appropriate design level flood events. (FEIS Section 6.11.8)

Substation Erosion Control Measures. In the final design of the substation, Stony Creek will incorporate appropriate erosion and stormwater control measures, as dictated by the final SWPPP to be submitted to the NYSDEC, in accordance with the drainage discussions in the DEIS. (FEIS Section 6.2.2) In the design and construction of the substation, Stony Creek will employ appropriate operational controls such as scour holes, levelizers and other typical stormwater management features. (FEIS Section 6.2.4)

Dewatering Hoses. Stony Creek will use silt bags on the outlets of dewatering hoses. .Dewatering of foundation pits, if necessary in agricultural fields or elsewhere, will be carefully monitored to prevent excessive accumulation of the pumped water, to ensure it doesn't result in significant flows into wetlands, and to ensure it doesn't cause significant soil erosion. If a dewatering operation is found to result in erosion, Stony Creek will take appropriate steps, such as use of sediment bags, to minimize soil erosion. Other management techniques could include limiting pumping in cases where pumped water would pool on saturated soils (FEIS Section 6.4.8)

ECS Installation on Steep Slopes. If ECS cables are installed in areas where the local slope is 15% or more, after backfilling and restoring the area, Stony Creek will seed the area to encourage vegetation that will stabilize the backfill and minimize erosion. If necessary, Stony Creek will also install water bars to prevent erosion until vegetation is established. (FEIS Section 6.4.9)

To minimize water flow down ECS trenches, if the Project design requires installation of ECS through a corridor whose length is 40 feet or greater and whose average slope is 15% or more,

then, Stony Creek will install trench breakers along such cable routes at the intervals specified in FEIS Appendix A.2.m. (FEIS 6.10.8)

Soil Stockpiles. During construction, Stony Creek will stockpile excavated materials and at completion of construction it will reuse this material on site for regarding and re-vegetation. Stony Creek will take appropriate measures to prevent erosion of topsoil stockpile. (FEIS Section 6.8.10)

Drainage Swales. Where necessary, Stony Creek will install new drainage swales alongside access roads and will install new or upgraded culverts where drainage swales need to pass under access roads. (DEIS Section 3.3)

Road Construction. Where possible, the roads will be constructed flush with the surrounding grade, in order to minimize impact to stormwater flow. (DEIS 1.4.6)

5.5 Lighting

Motion Detectors for Lights. Where practical, Stony Creek will employ motion detector lights at facility buildings. (FEIS Section 6.15.3)

FAA Lights. To minimize impact of the FAA lights to viewers at ground level, Stony Creek will use nacelle lights with the lowest intensity by the FAA. (DEIS Section 3.8.9)

FAA Notice. Prior to construction Stony Creek will submit final turbine coordinates and heights to the FAA via Form 7460 - Notices of Proposed Construction. (FEIS Section 6.25.7)

General Design Requirement. Exterior lighting of the WTG, substation, O&M building, and used for temporary task lighting will be designed and installed to avoid unnecessary lighting and visibility of the Project at night. (DEIS Section 3.8.9)

Lighting of NYSEG Switchyard. Stony Creek will design and construct the NYSEG switchyard to avoid off-site lighting effects to the extent such designs are in compliance with NYSEG requirements and in compliance with applicable codes. This will include requesting NYSEG allow the switchyard lights to be operated by manual switches or by motion detectors, with no unnecessary permanent lighting. To the extent practicable and allowed by NYSEG, the design of the substation exterior lighting will employ plans for using temporary task lighting instead of broad area lighting. This will include providing NYSEG with the ability to operate the switchyard lights by manual switches or by motion detectors, with no unnecessary permanent lighting. (DEIS Section 1.2.11, FEIS Section 6.2.3)

Lighting of Stony Creek Substation. Stony Creek will design lighting at the Project substation to minimize off-site lighting effects, to the extent practicable and in accordance with design codes for such facilities. Appropriate mitigation measures will include downward lighting and/or backlighting to avoid off-site lighting effects. (FEIS Section 6.2.3)

5.6 Agricultural Protection

5.6.1 Design Requirements for Agricultural Fields

NYSDAM Guidelines. Stony Creek will comply with the Orangeville Town Law and the current version of NY DAM Guidelines. (FEIS Section 6.4.1) In areas where access roads, WTG sites, and crane pads will be constructed in active agricultural fields, Stony Creek will comply with the New York State Department of Agriculture and Markets ("NYSDAM") Guidelines for Agricultural Mitigation for Wind Power Projects ("NYSDAM Guidelines") and the requirements of Section 1116.B.13 of the Orangeville Town Law. Stony Creek will construct the Project following NYSDAM Guidelines for Agricultural Mitigation for Wind Power Projects which will reduce agricultural impacts. (DEIS Section 7.2)

NYSDAM Consultation. Stony Creek will consult with NYSDAM prior to commencing construction of the Project. (FEIS Section 6.10.21)

ECS Junction Boxes. Stony Creek will locate junction boxes outside of active agricultural fields to the maximum extent practicable. (FEIS Section 6.10.14)

No Slag. Stony Creek will not use slag in the construction of access roads, crane pads, or WTG aprons, or any other portions of the project. (FEIS Section 6.4.7, DEIS Section 1.4.16)

Use of Existing Farm and Logging Roads. Stony Creek will design and construct Project access roads to follow existing farm roads, to the extent practicable. (DEIS Section 3.2.1) Stony Creek will use existing farm and logging roads for Project access roads to the extent practicable. (DEIS Section 3.5.1) Stony Creek will design roads to generally follow existing farm or logging roads where practicable and follow existing topographic contours to minimize cut and fill. (DEIS Section 3.8.9)

Known Drain Tiles. FEIS Appendix A.2.n is a map showing the agricultural areas identified in the comment as locations where roads could be re-routed or where the Wyoming County SWCD records indicate contain subsurface drain tiles or grassed waterways. Prior to construction of Project facilities in the agricultural areas shown in the subject map, Stony Creek will consult landowners to make appropriate adjustments to minimize impacts where practicable. (FEIS Section 6.10.19)

Soils testing. As part of the evaluation of the construction sites, Stony Creek will perform soil testing, which will specifically include consideration of seasonal conditions such as plasticity and moisture content in analysis of agricultural soils for use in construction scheduling, foundation design and construction. (DEIS Section 3.3)

5.6.2 Construction Requirements for Agricultural Fields

Agricultural Monitor. Stony Creek will hire a qualified Agricultural Monitor to ensure that Stony Creek adheres to NYSDAM Guidelines and Orangeville Town Law during construction, restoration and post-construction monitoring and restoration activities in active agricultural fields. (FEIS Section 6.10.22)

Drain Tiles. Installation of WTG foundations and ECS cables may require breaking existing drain tiles. In such instances Stony Creek will repair or re-route drain tiles to allow for proper drainage of the fields. Drain tiles damaged during construction will be repaired to as close to pre-construction conditions as possible, unless the structures are to be removed as part of the Project design. (DEIS Section 3.3) If a drain tile is damaged during Project construction, Stony Creek will repair or re-route drain tiles to allow for proper drainage of the fields. (FEIS Section 6.10.14) If Project construction impacts drain tiles, Stony Creek will consult with each landowner on the methods to design and install drain tile repairs. (FEIS Section 6.10.20)The on-site Agricultural Monitor will generate regular updates on all drain tiles encountered, and the Agricultural Monitor will be responsible for communicating this information to NYSDAM on a weekly basis. (FEIS Section 6.10.20)

ECS Installation and Topsoil. If Stony Creek uses open trench methods to install ECS cables in active agricultural fields, Stony Creek will strip topsoil from the expected impact areas prior to digging of the trench. In areas where Stony Creek plans to use a trenching machine to install ECS cables in an active agricultural field, Stony Creek will strip topsoil from the expected impact areas if NYSDAM and the landowner agree (to be documented) that it is preferable to strip topsoil from expected impact areas. (FEIS Section 6.4.1) Where ECS installation methods require excavations more than 40 inches wide, Stony Creek will strip and stockpile the topsoil. (DEIS Section 3.3)

ECS Depth. If any ECS cables are installed in active agricultural fields, Stony Creek will install such cables with a minimum of 4 feet of cover, except that if cables are installed in areas where bedrock exists within 4 feet of the surface, the ECS cables shall be installed entirely below the top of the bedrock and not less than 24 inches deep. (FEIS Section 6.4.2) Where a trenching machine is used for ECS cable installation, Stony Creek will place cables at a depth of 48 inches, in accordance with guidelines from the NYSDAM (FEIS Section 6.10.8) and Town of Orangeville Zoning Law, Article XI.13b.v.

ECS Installation in Steep Slopes. To minimize water flow down ECS trenches, if the Project design requires installation of ECS on slopes that are longer than the interval and slope requirements of Drawing A-12 and where the toe of the slope is on or near an active agricultural field, Stony Creek will install trench breakers along such cable routes at the intervals specified in Drawing A-12. (FEIS Section 6.10.8)

Excess Rock from ECS Trenches. Stony Creek will remove excess waste rock materials from active agricultural areas during cable trenching or foundation excavation. Stony Creek will not

return excavated stone or rock closer than 24 inches from the exposed subsoil work surface of the stripped portion of the ECS right-of-way, and Stony Creek will only use topsoil for ECS cable trench or foundation site backfill at depths in which topsoil is normally found. In cases where additional backfill soil must be imported, Stony Creek will use soils of a similar texture to the existing soils on site. (FEIS Section 6.10.9) If during open trenching for ECS trenches or foundation excavation Stony Creek encounters waste rock unsuitable for use as backfill, Stony Creek will dispose of such material in a manner approved of by the landowner and in compliance with all state and county laws. Constraints posed by shallow soils, poor drainage, and high groundwater, if any, will be considered in the project design. (FEIS Section 6.8.1)

Crane Walks. If Stony Creek moves the track-mounted crane (i.e., crane "walks") across active agricultural fields, Stony Creek will not have the crane travel in the same path more than two times, and Stony Creek will conduct such crane walks so that rutting of topsoil does not exceed 4 inches in depth. If a crane is walked over a field in active agricultural use, then it will be treated as a disturbed agricultural area and restored with decompaction and rock-picking as specified in NYSDAM guidelines. (FEIS Section 6.10.5)

Topsoil and Roads. As part of this compliance, Stony Creek will strip, stockpile, and replace topsoil from areas where roads WTG will be installed. (DEIS Section 1.4.21)

Tire Ruts in Topsoil. If construction requires activities in an agricultural area that has wet conditions resulting in ruts over 4", then to complete activities in that area Stony Creek will either (i) strip topsoil before allowing construction traffic in the area, (ii) use construction mats when working in the area, or (iii) delay construction in that area until soil conditions improve (either by drying out or by freezing). (DEIS Section 3.1.3)

Construction Traffic on Un-improved Tractor Paths. If Stony Creek crews for ECS installation or tree clearing desire to drive on less defined farm roads, i.e., "tractor paths" along field edges, then Stony Creek will only allow such access if conditions would not result in excessive rutting, and if tractor path access is by relatively few vehicles. If conditions are not dry enough to allow tractor path access without excessive rutting, or if tractor path access requirements are significant, Stony Creek will strip and stockpile topsoil prior to use of the tractor path, and restore the path upon completion. (FEIS Section 6.10.7)

Topsoil Stockpiles. Stony Creek will take appropriate measures to prevent erosion of topsoil stockpiles. Typically, according to NYSDAM, the most effective measure for stabilizing soil stockpiles is to leave the stockpile uncovered and to seed it, allowing vegetation to stabilize the soil. Silt fencing would be installed on the downhill side of stockpiles. Depending on the time of the year, seeding may not be an appropriate mitigation measure to prevent erosion of soil stockpiles. If this is the case, Stony Creek will implement alternative erosion control measures such as mulching. (FEIS Section 6.10.12)

Temporary Impacts to Agricultural Operations. During construction, Stony Creek will employ the following measures (per Town of Orangeville Zoning Law, Article XI, 13.B) to mitigate temporary impacts to agricultural operations (DEIS 3.3):

- Construction areas will be marked prior to the start of construction.
- Topsoil will be stripped and stockpiled in areas where WTG's and access roads are to be built. Following construction, topsoil will be replaced it in its proper sequence to maintain the former land use of the temporarily disturbed area.
- Construction vehicles will not be parked in agricultural fields, except those that are access roads, the construction staging area, or otherwise marked as a construction area.
- Unused excavated material will be deposited only in areas where the landowner has granted consent to do so.
- In active agricultural fields, prior to replacement of topsoil will be preceded by subsoil de-compaction, and will be followed by topsoil de-compaction and removal of large rocks in the topsoil.
- Restored areas will be re-graded and reseeded.
- New York State specifications for erosion and sedimentation control will be followed at construction sites to allow the land to return to its pre-development function.

Final access roads will be graded to allow for farm equipment crossing and to restore original surface drainage patterns.

5.6.3 Restoration Requirements for Agricultural Fields

Coordination with landowners. Stony Creek will work with landowners to perform restoration work in a way that is conducive to farming activities. Restoration work will be addressed at the preconstruction meeting with landowners and onsite construction managers will be available through the restoration process to address issues that may arise on a site by site basis. One or more Agricultural Monitors will be present to ensure that restoration incorporates the mitigation measures required by agencies including the Town and NYSDAM. (FEIS Section 6.10.5)

Soil Conditions. Stony Creek will evaluate soil conditions and properties, including plasticity and moisture content, before commencing mitigation and restoration activities in agricultural areas. (FEIS Section 6.10.17)

De-compaction. Stony Creek will decompact impacted agricultural areas by first decompacting the subsoil to a depth of eighteen (18) inches with a deep ripper or heavy duty chisel plow (Town Law Article XI,13c.i). Subsoils will be decompacted using a multi-shank subsoiler. This is

different from standard chisel plows, as standard chisel plows do not always provide adequate decompaction. Prior to replacing topsoil in an impacted agricultural area, Stony Creek will make multiple passes with the subsoiler. Decompaction will be performed when soil conditions are dry enough to allow for proper shattering of the subsoils, since decompaction will not be effective if conditions are too wet. Following decompaction of the subsoil and prior to topsoil replacement, rocks greater than 4" are picked and removed from the subsoil. Following decompaction and rock picking from the subsoil, Stony Creek will replace the topsoil, pick rocks 4" and greater from the topsoil surface, disc the topsoil, and apply seed. (FEIS Section 6.10.13)

Rock-Picking. Stony Creek will remove waste rock greater than four inches in diameter found during construction and restoration activities in agricultural areas. (FEIS Section 6.10.14) Stony Creek will remove waste rock uplifted during decompaction of impacted agricultural areas. (FEIS Section 6.10.13)

Fertilizer. Stony Creek will add fertilizer to seeding when conducting restoration activities, but does not anticipate using other special soil amendments such as lime. (FEIS Section 6.10.14)

Wetlands in Ag Use. For temporarily-disturbed wetland areas that are in active agricultural use, Stony Creek will restore the area in accordance with the guidelines of the New York State Agriculture and Markets. (FEIS Section 3.12)

ECS Restoration. At the completion of ECS installation in active agricultural fields, regardless of the installation method used, Stony Creek will restore affected areas in accordance with the requirements of the Town Law and the guidelines of the NYSDAM. (FEIS Section 6.4.1)

5.6.4 Operations Requirements for Agricultural Fields

Monitoring of Crop Yields. Stony Creek will perform a post-construction monitoring and remediation period of no less than three (3) years immediately following the completion of initial restoration in assessing potential impacts to crop yields in areas that were impacted during construction (Town Law, Article XI, 13d.ii). In assessing changes to crop yields, Stony Creek will consult with NYSDAM or use the NYSDAM "Special Crop Productivity Monitoring Procedures." (DEIS Section 3.3)

Checks for Waterboils at Bottom of Hills Crossed by ECS Cables. As described in the Project's Agricultural Mitigation Plan, for three years following completion of Project construction, Stony Creek will inspect cable runs in agricultural fields for signs of seeps, waterboils and wet areas attributable to Project impacts. If found, Stony Creek will design and implement repairs to restore the drainage to pre-construction conditions, or better. (FEIS Section 6.10.8)

5.7 Groundwater

5.7.1 Design Measures for Groundwater

Separation of Turbines from Non-Participating Dwellings. Stony Creek will maintain a minimum of distance of 1,320 feet between wind turbines (as measured from the center of the wind turbine tower) and the nearest non-participating dwelling. (FEIS Section 6.11.29)

Phase 1 ESA. Prior to commencement of construction, Stony Creek will complete a Phase I Environmental Site Assessment (Phase 1 ESA) that will identify Recognized Environmental Conditions (RECs). (FEIS Section 6.8.9)

Environmental Monitoring Plan. Project construction activities raise environmental concerns of chemical spills, dust control, soil and vegetation disturbance, preservation of water quality, wetlands impacts, agricultural field impacts, and disposal of solid and sanitary waste. To minimize such impacts during construction, Stony Creek will develop and implement an Environmental Monitoring Plan. (DEIS Section 3.16) Stony Creek will implement its Environmental Monitoring Plan to ensure that the mitigation measures, environmental protections and best management practices associated with construction of the Project are implemented in accordance with the permit conditions of the Project. (DEIS Section 3.16)

5.7.2 Construction Requirements for Groundwater

Training to Identify Soil Contamination. When performing excavations in areas where the Phase 1 ESA finds no RECs or other environmental concerns, Stony Creek will field screen soils for contamination using visual indicators and olfactory senses. Stony Creek will train field personnel to identify indicators of soil contamination. (FEIS Section 6.8.9)

Excavation of Contaminated Soils. If Stony Creek must perform excavations in areas where the Phase 1 ESA or other checks indicate soil contamination is likely, Stony Creek will analyze representative soil samples from these areas for potential contaminants in accordance with applicable sections of 6 NYCRR Part 375 (effective 12/14/2006) and DER-10 Technical Guidance (May 2010). Generally, if contaminants are confirmed to be present in excavated soils, Stony Creek will stockpile contaminated soils separately from other soils, will mark these soils clearly in the field, and if they cannot be remediated on site and re-used, Stony Creek will dispose of the contaminated soils in accordance with NYSDEC DER and USEPA RCRA regulations at a licensed off-site facility. (FEIS Section 6.8.9)

Well Water Withdrawals. In the unlikely event that Stony Creek must draw water from a well, Stony Creek will limit quantities to what would be drawn for a medium size dairy barn, a typical use in the Project Area. (FEIS Section 6.11.30)

Landslides and ECS Installation Near North-Flowing Streams. When installing ECS cables in areas that are (i) near north-flowing streams, and (ii) north of Route 20A and east of Nesbitt Road,

Stony Creek will carefully monitor soil conditions to ensure soil stability is maintained and landslides do not occur. (FEIS Section 6.8.6)

5.7.3 Operations Requirements for Groundwater

Spill Response Equipment. Spill response equipment and materials will be stored at the operations and maintenance building and in the maintenance trucks. (FEIS Section 6.11.9)

Main Transformer Containment Checks. Stony Creek will inspect the secondary containment for the main transformer after rainfall events of 2 inches of rain or more over a 24 hour period. If during such inspections Stony Creek finds the available containment volume is less than required to contain an oil leak from the transformer, then Stony Creek will drain the water in the containment to a level where there is sufficient volume available to contain an oil leak from the transformer. (FEIS Section 6.11.17)

Pad-Mount Transformer Checks. To ensure integrity of the pad-mount transformers, prior to the Project beginning commercial operations, Stony Creek will complete an infra-red or equivalent survey at 100% of the pad-mount transformers. Additionally, as part of every regular scheduled wind turbine maintenance, Stony Creek will visually inspect the pad-mount transformers, and the ground around the pad-mount transformer to identify any leaks. If any leaks are identified in pad-mount transformers, Stony Creek will take prompt measures to prevent the leak from contaminating soil under the transformer, including possibly replacing or repairing the transformer. (FEIS Section 6.11.19)

5.8 Plants and Wildlife

Plant Protection. Stony Creek will construct the Project in accordance with New York State requirements regarding protected plant species, including Environmental Conservation Law, § 3-0301, 9-0105, 9-1503; and 6 NYCRR 193.3. (FEIS Section Section 6.13.4 and 6.13.5)

Preventing Import of Invasive Species with Construction Materials. Stony Creek will identify satisfactory sources of any fill and/or construction materials including topsoil, sand, gravel, rock, and crushed stone, from commercial mines and other offsite locations. Only clean, regional sources of fill and/or construction materials will be used during the construction, and restoration of the Project Area. Stony Creek will require its contractors to meet this requirement, and the Project's quality assurance plan will ensure the requirement is met. (FEIS 6.13.2)

Preferred Months for Tree Clearing. To minimize impacts to bats, Stony Creek will, to the extent practicable, perform clearing of older, mature trees in the winter months of November, December, January, February, and March. (FEIS Section 6.16.60)

Take Permit. If the NYSDEC determines that the Project will likely result in a Take, then Stony Creek will work with the NYSDEC to apply for and obtain a New York Incidental Take Permit. (FEIS Section 6.17.2)

Bald Eagles. Stony Creek will comply with applicable laws and regulations for protected species, including those that are specific to Bald Eagles. (FEIS Section 6.19.1)

Jefferson Salamander. To minimize potential impacts to the Jefferson Salamander, Stony Creek has undertaken a detailed review of the habitat and has relocated turbines T-57, T-58, and T-59 and their associated roads and cables. (FEIS Section 4.5)

Current NYSDEC Guidelines. Stony Creek will utilize current NYSDEC standards in the post-construction Bird Habituation and Avoidance Study, including replacing some of the point counts with sets of transects, if appropriate. (FEIS Section 6.17.11)

Post-Construction Monitoring. Stony Creek will perform post-construction bird and bat monitoring in accordance with guidelines of the NYSDEC, Post Construction Monitoring Plan provided in FEIS Appendix A.3.c., and Orangeville Town Law XI.B.17. Stony Creek will provide final reports on post-construction bird and bat monitoring no later than January 31st of the year following the year in which the studies or surveys were performed. (DEIS Section 3.5.3 and FEIS Section 3.8, 6.17.1, 6.17.8, 6.19.3, 6.19.4, 6.19.5, 6.19.6, 6.19.7, 6.19.8, 6.19.9, 6.19.10, 6.19.11, 6.19.12, 6.19.13, 6.19.14, 6.19.15, 6.19.16, 6.19.17)

5.9 Noise

Transformer Specifications. Stony Creek will use a main station transformer that has a sound power level of 102 dBA or less. (FEIS Section 6.20.18)

Post-Construction Noise Study. As required by the zoning code for the Town of Orangeville, Stony Creek will perform a post-construction noise study to show that the Project is operating within the applicable noise limits. The post-construction noise study will be performed by a third party professional with experience in community noise. (FEIS Section 6.20.47) To verify noise limits are being met, Stony Creek will perform post-construction noise monitoring to ensure turbine noise levels are in compliance with expected levels. (FEIS Section 6.20.58)

5.10 Public Roads

Road Agreement and Bond. Stony Creek will enter into a road agreement with the Town of Orangeville that will require Stony Creek to inspect and document the condition of Town roads prior to construction, to leave the roads in a condition equal to or better than their condition prior to the start of construction, and to post financial security that the Town can use to complete road repairs in the unlikely event that Stony Creek does not maintain or repair the roads as required by the road agreement. (FEIS Section 6.23.1)

Snyder Road Bridge. Prior to commencement of Project construction, Stony Creek will review with the Orangeville Highway Superintendent the roads to be used for Project construction and the ability of these roads, including bridges and culverts, to withstand the expected loads and traffic. As part of this review, Stony Creek will review the bridge on Snyder Road. If Stony Creek and the Town Highway Superintendent determine that the Bridge on Snyder Road is unable to support expected construction traffic, then Stony Creek will either (i) reroute traffic to avoid the Snyder Road bridge (using roads already identified), (ii) reinforce the Synder Road Bridge, or (iii) use a temporary bridge to cross Snyder Road. (FEIS Section 6.23.2)

5.11 Cultural Resources

Unanticipated Archeological Discoveries. During construction of the Project, Stony Creek will follow the Plan for Unanticipated Discoveries provided in FEIS Appendix A.5.a. As described in this plan, if during construction Stony Creek or its contractors encounters archeological artifacts, Stony Creek will bring such finds to the attention of the NYS SHPO. (FEIS Section 6.24.3)

Visual Impact Mitigation. As mitigation for expected visual impacts, in accordance with NYSDEC Policy on Assessing Visual Impacts, Stony Creek will fund improvements to historic resources in the community in an amount up to $1,500 for every MW of installed generating capacity (based on turbine design generating capacity). Stony Creek will fund such mitigations within two years after the commencement of commercial operations of the Project. (FEIS Section 6.24.3). The Town of Orangeville will decide how the mitigation funding will be spent.

5.12 Complaint Resolution

Correction of Television Reception Problems. In the event that the turbines cause a decline in reception quality, Stony Creek will provide alternative reception methods. Residents experiencing degradation of television reception should call the Project complaint line discussed in FEIS Section 6.5.3. When Stony Creek receives a television service complaint, it will hire a local television consultant to visit the residence to evaluate the source of the reception disturbance. If it is determined the disturbance is due to the wind energy facilities, Stony Creek will pay for the consultant to correct the service using a variety of methods, including possibly installing stronger antennas or possibly having basic cable or satellite service installed with annual reimbursements for such service provided to the Owner by Stony Creek. (FEIS Section 6.25.1)

To mitigate possible impacts to television reception, Stony Creek will manage a complaint management process where residents can identify issues believed to be caused by the Project, including concerns about television reception. Stony Creek will respond promptly to such concerns, and where the Project is found to be causing television reception problems Stony Creek will provide mitigation such as improving antennas or providing services that would help the resident have television reception similar to what it had just prior to the Project beginning to operate. (DEIS Section 3.11.2)

Complaint Resolution for Shadow Flicker. Stony Creek will run a complaint management program to investigate complaints related to the Project, including those related to shadow flicker. Where shadow flicker is identified and is occurring at a residence where expected annual shadow flicker hours is 20 hours or more per year, Stony Creek will fund installation of mitigations such as window blinds or new plantings that could block the shadows. (DEIS Section 3.7)

5.13 Pipeline Safety

5.13.1 Design Requirements for Pipeline Safety

ECS Crossing Design Coordination. Stony Creek will coordinate with the pipeline owner on the design and installation of ECS crossings of gas pipelines. (FEIS Section 6.4.10)

Steel Conduit for ECS Crossings. As required by DTI guidelines, Stony Creek will install the ECS cables in steel conduit for the full width of the DTI right-of-way at a depth that is underneath the DTI pipe by 24 inches or more and at an angle that is approximately perpendicular to the longitudinal direction of the pipe. (DEIS Section 1.4.7)

5.13.2 Construction Requirements for Pipeline Safety

ECS Crossing Construction Coordination. Stony Creek will coordinate activities near the pipeline with DTI. Stony Creek will notify DTI several months in advance to coordinate construction designs, and shortly before actual construction around the DTI pipeline so that DTI can arrange to have an observer at the site during construction. (FEIS Section 6.28.12, DEIS Section 3.15.9)

Steel Plates. If construction of access roads or widening of public intersections results in construction traffic traveling over underground gas pipelines, Stony Creek will protect such lines by use of temporary steel plates and other measures that may be determined appropriate after consultation with the owner of the gas pipeline. Stony Creek will repair any damage it causes. (DEIS Section 3.9)

Fencing of Pipeline ROW. To ensure construction traffic does not inadvertently enter the ROW without authorization, Stony Creek will work with DTI to install markers or fencing delineating the bounds of the DTI right of way near the turbines identified in the FEIS as T-42, T-45 and T-48. The WTG worksites for these turbines will be modified from the standard circular footprint so as to avoid activities on the DTI right-of-way. (DEIS Section 3.14.9)

Blasting. Stony Creek will not use blasting to excavate for the three turbine foundations closest to the DTI gas pipeline, i.e., the foundations for the turbines at the locations identified in the FEIS as T-42, T-45 and T-48. (FEIS Section 6.29.6)

5.13.3 Operating Requirements for Pipeline Safety

WTG Grounding System Tests. Stony Creek will perform annual tests of the grounding system for any Wind Turbine installed at a location within 600 ft of a natural gas transmission pipeline. If testing finds the grounding system is performance has degraded in such a way that it could risk the cathodic protection system of the DTI gas pipeline, Stony Creek will repair the grounding system or take other appropriate actions to ensure protection of the gas pipeline. (FEIS Section 6.28.12)

5.14 Decommissioning

Decommissioning Bond. To ensure funds are available for decommissioning, in the unlikely event Stony Creek does not fulfill its obligation, Stony Creek will continuously maintain a fund or bond payable to the Town for the removal of non-operating WTGs and appurtenant facilities. (FEIS Section 6.31.3, DEIS Section 3.17) To ensure proper decommissioning, Stony Creek will post a bond or equivalent financial security, as required by Section 1116.G.3 of the Town Zoning Code. (DEIS Section 3.17)

Removal Requirement. If in the unlikely event the Stony Creek Wind Farm ceases operations, Stony Creek will remove facilities from landowner's properties within 12 months in accordance with Stony Creek's contracts with landowners. (FEIS Section 6.31.7, DEIS Section 3.17)

5.15 Miscellaneous Requirements

5.15.1 Design Requirements

Setbacks. Stony Creek will maintain minimum distances between wind turbines (as measured from the center f the wind turbine tower) and the nearest non-participating dwelling and from road centerlines, boundary lines of parcels owned by non-participating landowners, road centerlines, and public buildings in accordance with the Town Zoning Code. (DEIS 1.3.4)

Buried Cables. Stony Creek will bury the ECS cables and will not use overhead lines. (DEIS Section 3.8.9)

Seismic Design. Stony Creek will ensure the wind turbines installed in the Project have the appropriate seismic design rating for the seismic zone in which the Project Area exists. (FEIS 6.29.9)

ECS Design Drawings. Construction drawings will clearly specify the minimum burial depth of four feet in agricultural fields. (FEIS Section6.10.11)

Substation Landscaping. In accordance with Town requirements, Stony Creek will install grass landscaping around the substation. (DEIS Section 1.2.8)

Access Road Signs. At the entrance to every access road, Stony Creek will install a steel sign mounted on a steel road sign pole that will identify information required by the Wyoming County emergency services department, including the access road number and the ID's of the turbines accessible from that road. These signs will be sized to be readable by vehicles driving at typical speeds on the public road, and are expected to be approximately 18" x 12". In addition to the access road ID signs, Stony Creek may install similar 18" x 12" metal signs at the entrance to access roads notifying people that the roads are on private property. These signs will be installed where requested by landowners. (DEIS Section 1.2.13)

O&M Building Sign. At the Project's operation and maintenance facility, Stony Creek will install a main sign identifying the Project name and Project Owner. The sign is planned to be approximately 3 feet x 11 feet, with landscaping and two flag poles installed near the sign. (DEIS Section 1.2.13)

Substation Signs. At the entrances to the Project Substation areas, Stony Creek will install various safety and identification signs. They will warn of high voltage and they will provide information on the operator and contact information for NYSEG and the Project operator. These signs will be metal signs that will be mounted to the gates in the substation chain link fence. Each substation sign will be sized approximately 42" x 60" or less. (DEIS Section 1.2.13)

O&M Building Design. Stony Creek will design and construct the O&M Building to integrate with the surroundings. (DEIS Section 3.8.9)

Fencing at Substation and O&M Building. Fencing used for the substation and O&M building storage yard will be non-reflective chain link. (DEIS Section 3.8.9)

Building Permits for O&M Building. Stony Creek will submit detail design drawings on the O&M Building to the Wyoming County building inspector department and will obtain necessary building permits and inspections for the O&M Building. (DEIS Section 1.6.2)

Microwave Paths. Stony Creek will mitigate impacts to microwave paths by siting turbines so that WTG, including their blades, are not placed within the path of a licensed microwave transmission path. (DEIS Section 3.11.1)

Radar Impacts. Stony Creek will work with the FAA and DOD to mitigate impacts to homeland defense and air defense radars, including potential relocation of specific problematic wind turbines. (DEIS Section 3.11.4)

Foundation Inspection, Setbacks. To mitigate risk to public safety from a turbine tower collapse and apparent foundation failure such as what occurred at the Fenner wind project in Madison County, NY, Stony Creek will (i) install turbines away from homes and public roads by a distance that is equal to or greater than the turbine tip height, and (ii) hire a quality inspector during construction to verify that foundations are installed in accordance with design documents. (FEIS Section 6.28.7)

Industry Standards. Stony Creek will construct WTG in accordance with all applicable local, state and federal regulations, industry standards, and turbine manufacturer recommendations. (DEIS Section 3.14.3)

5.15.2 Construction Requirements

Construction Monitor. To ensure construction activities are conducted in accordance with applicable regulations and conditions, Stony Creek will employ a third party to serve as an Environmental Monitor and to follow an Environmental Monitoring Plan ("EMP"), a draft of which is provided as Appendix I6. (DEIS Section 1.4.20). Stony Creek will also fund an escrow account that will be used to pay the costs for the Town of Orangeville to hire an engineering firm to monitor the Project on behalf of the Town and ensure that the Project is constructed in conformance with the mitigation measures presented throughout the FEIS, listed in the Town's Finding Statement and in compliance with any consitions of approval.

Permit Requirements in Contracts. Stony Creek will incorporate into its construction contracts requirements that the contractor, including its employees, agents and assigns, must comply with applicable laws, permits, and related conditions when performing services for Stony Creek. (DEIS Section 3.16)

Construction Security. Stony Creek will employ the use of fencing (including gated areas where appropriate) and signage as a means of preventing unauthorized personnel access to key construction areas such as the construction staging area. (DEIS Section 3.14.4)

Dig Safely NY. Prior to starting any grading or excavation activities in an area, Stony Creek will contact "Dig Safely NY" to mark all utilities in the field where grading or digging or excavation will occur. (DEIS Section 1.4.2) Stony Creek will call Dig Safely NY to mark utilities prior to commencing construction in a new area, including those where gas pipelines are known to be present. (DEIS Section 3.14.9) Stony Creek will contact Dig Safely NY prior to performing any ground excavation for construction, and as part of the Dig Safely NY service, any underground electric lines would be identified. If buried electric lines are identified, Stony Creek will take necessary steps to avoid interfering with the identified lines. (DEIS Section 3.14.10)

Invasive Species. To minimize impacts from the spread of invasive species, Stony Creek will follow the Invasive Species Control Plan provided as Appendix I.8. (DEIS Section 3.5.6)

Staging Area Removal. Upon completion of Project construction, Stony Creek will restore the staging area by removing the gravel surface, re-grading the area with stockpiled topsoil, and seeding. (DEIS Section 1.4.3)

Dust Control. Stony Creek will implement dust control measures in areas of high construction traffic during excessively dry periods. As necessary, dust will be controlled using a water truck to periodically spray water on the surface of the access roads, reducing "dust plumes" following truck traffic. Stony Creek will use dust control judiciously to (i) prevent unnecessary runoff from

the access roads that could affect adjacent streams or wetland areas and, (ii) maintain the structural integrity of the access roads. (DEIS Section 1.4.18)

Concrete Truck Rinsing. To protect agricultural lands and to mitigate against high lime content runoff from entering wetlands, ponds, or streams, Stony Creek will construct the Project with appropriate procedures to prevent the improper handling of concrete. The rinsing of concrete trucks will be limited to designated concrete truck washouts. Final disposal of concrete will be at licensed landfills and will not add to the number of truck trips. (DEIS Section 1.4.19)

Blasting Plan. In the unlikely event that blasting is required, Stony Creek will conduct blasting activities accordance with the Blasting Plan provided as DEIS Appendix I. (DEIS Sections 3.1.2, 3.15.1) If blasting is required for a location where a residence is less than 1,000 feet away from the blasting site, Stony Creek will plan the blasting so that ground level vibrations will be 4 mm/sec at the nearest residence to the blasting site. If blasting is necessary to construct the Project, Stony Creek will design the blasts so that vibration levels are less than 25 mm/sec at any non-participating residences. (FEIS Section 6.29.4). Prior to conducting any blasting, Stony Creek will:

- conduct a pre-blasting survey of structures within ¼ mile of the blast site (on both participating and non-participating properties) so that any damage from blasting can be verified, and Stony Creek would be responsible to repair such damage. (FEIS Section 6.8.3)
- conduct a pre-blasting survey of groundwater wells located 500 ft or less from the blast site so that any damage from blasting can be verified, and Stony Creek would be responsible to repair such damage. (DEIS Section 3.15.1)

Electricity Service Disruptions. Stony Creek will work with NYSEG, the local electric service provider, to minimize service disruptions that could result from electric distribution wires needing to be temporarily disconnected to allow equipment to pass under the wires. If modifications are required that will temporarily disrupt electric service, Stony Creek will notify affected users in advance of the disruption. (DEIS Section 3.9)

Spill Prevention. Fuel tanks will be staged at the construction laydown yard. These tanks will be double-walled for spill prevention and containment. Spill kits will be available at the construction laydown yard. If the Stony Creek construction laydown area has one or more aboveground storage tanks with a combined oil storage capacity of 1,320 gallons or more, then Stony Creek will comply with the applicable regulations regarding spill prevention, control and countermeasures (SPCC) plans at such sites. (FEIS 6.4.15)

During construction, Stony Creek will follow the procedures described in the Spill Response Plan provided in Appendix I.7 of the DEIS. Stony Creek will be responsible for purchasing spill response equipment and training construction personnel. Spill response equipment will be stored at the laydown yard. (FEIS 6.11.9)

Restoration. As the final stage of construction, Stony Creek will restore temporarily-impacted areas at the construction staging area, areas disturbed by access road construction, and the WTG worksites. (DEIS 3.16)

5.15.3 Operations Requirements

Local Staff. Stony Creek will hire local operations personal if possible. (FEIS Section 6.26.7)

Rescue Training. Stony Creek will train all of its Project employees in the use of the Tractel rescue equipment. (FEIS Section 6.28.3)

O&M Responsibility. Stony Creek will be responsible for the wind turbines and will manage and perform the operations and maintenance tasks as outlined in the Operations and Maintenance Plan provided in DEIS Appendix I. (FEIS Section 6.31.2)

Mercy Flight Coordination. To ensure Mercy Flight operators are aware of WTG, prior to construction of the Project, Stony Creek will provide Mercy Flight with final coordinates where WTG will be installed. (DEIS Section 3.14.12)

Emergency Protection Services. Stony Creek will arrange for special training that may be required for fire departments to provide fire protection and emergency services for the Project and its operators. If needed, Stony Creek will purchase high angle rescue equipment that local fire departments or emergency response teams may need to adequately provide emergency support for Project personnel. (DEIS Section 3.14.5)

Work Under WTG in Icing Conditions. For work around WTG during snow and ice conditions, Stony Creek will require members of its operations team to wear hard hats and follow icing safety procedures for operating, approaching, and re-starting wind turbines. (DEIS Section 3.14.1)

Fire Response Procedures. Stony Creek will work with local fire departments to design procedures for responding to a fire at a WTG site. (DEIS Section 3.14.5)

Herbicide Application. Stony Creek may use standard commercially-available herbicides to control vegetation around turbine bases, in access roads, around the Operations and Maintenance facilities and inside and around the substation yard. Stony Creek will not apply herbicides in active agricultural fields, unless those areas overlap with one of the aforementioned areas.

Stony Creek will only use approved herbicides applied in accordance with label instructions and applicable NYSDEC regulations on use of such materials and notification of neighbors. In using such herbicides, Stony Creek shall consider potential impacts to nearby streams, if any, that could occur from translocation of soil sterilants during a rainfall event. (FEIS Appendix A.3.d)

Pesticide Application. Stony Creek may use standard commercially-available pesticides to control insects and small mammals (such as mice) around turbine bases, around the Operations and Maintenance facilities and inside and around the substation yard and control buildings. Stony Creek will not apply pesticides in active agricultural fields, unless those areas are immediately adjacent to one of the aforementioned areas.

Stony Creek will only use approved pesticides applied in accordance with label instructions and applicable state regulations on use of such materials. (FEIS Appendix A.3.d)

Storage of Herbicides and Pesticides. Stony Creek will store herbicides and pesticides at either the Stony Creek O&M center or the High Sheldon O&M center. Storage of such materials will be done in accordance with applicable NYSDEC guidelines. (FEIS Appendix A.3.d)

SPCC Plan. Stony Creek will be responsible for implementation of the SPCC Plan, including purchasing of equipment and training of personnel who will implement the procedures in the SPCC Plan. At the site, the Lead Technician or the Site Operations Manager will be responsible for ensuring the plan is correctly implemented. Spill response equipment and materials will be stored at the operations facility in the Project Area and on maintenance trucks. (FEIS 6.11.10)

Signs for WTG Near Snowmobile Trails. For any WTG located within 500 ft of a snowmobile trail Stony Creek will maintain signs warning snowmobile trail users of potential snow and ice shedding. The signs will be located at points approximately 500 feet from the wind turbine, and Stony Creek will confer annually with the local snowmobile club to learn of any changes in snowmobile routes that might result in the trail being within 500 feet of a Stony Creek wind turbine. (FEIS Section 6.28.12, DEIS Section 3.14.1) For WTG shown on DEIS Map 17 as being close to snowmobile trails, Stony Creek will maintain signs warning snowmobile trail users of potential snow and ice shedding at points 500 feet from installed wind turbines. (DEIS Section 3.14.1)

Tax Payments. Stony Creek will pay all Special District taxes (no tax breaks) and also make PILOT and HCA payments. (FEIS Section 6.26.4)

6 Responses to Public Comments

This section of the FEIS provides responses to comments on the DEIS that the Town Board received in submittals by the public and from other involved or interested agencies. For purposes of organizing the submittals, each oral presentation made at the public hearing was considered to be a separate submittal. The Town assigned each submittal an identifying number, and then reviewed all of the submittals to identify the "comments" in each submittal. Comments were then grouped into topics and sub-topics so that an cohesive response can be made to each topic raised.

Each topic is covered by a second order heading (e.g., Section 6.10 Agricultural Resources), and by subtopic in sections with a third-order headings (e.g., 6.10.6 Stormwater Management in Agricultural Fields). Each third order heading in Section 6 includes one to several numbers which identify the specific comments addressed in the subsection.

6.1 Project Purpose, Needs and Benefits

6.1.1 Net Capacity Factor (334, 340)

Regarding Section 1.1.2, what is the basis for the capacity factor of 30%? And why should the reader believe it? What is the expected "down time" for refurbishment or repairs? Will the turbines be dispatched to the electric grid as "must run" units, or will they be used as "peakers" to meet peak demand when revenue will be maximized? (Submittal 334 – Bassett, David)

Section 1.1.2. of the DEIS offers a single paragraph discussing how much electricity the Stony Creek project can be expected to generate. The DEIS says the project would generate 826,944 megawatt-hours (MWh) per year if it generated electricity at 100% of its rated or nameplate capacity. However, the DEIS also says the project can be expected to generate at a 30% "capacity factor," that is, 30% of its rated capacity, or "approximately 248,083 MWh per year." This estimate is significantly higher than NYISO estimates. NYISO expects wind farms in New York to generate at 30% of their rated capacity in the winter, when demand for electricity is low, and only 10% in the summer, when load demand is highest. Effective generation rates can be expected to be even less. GE Energy reported to NYSERDA in 2005 that, while the capacity factor of utility-scale wind turbines in New York is about 30%, the "effective capacity" of these turbines is 10%, "due to both the seasonal and daily patterns of the wind generation being largely out of phase with the NYISO load patterns." Consistent with NYISO, this conclusion recognizes that most electricity from wind power is generated during cold winter nights, but electricity demand is greatest during warm summer days.

Thus, compared to the assertion of a 30% generation rate in the DEIS, the Stony Creek project can be expected to generate at between 10% and 20%.

Even if the project were to generate at 30% of its rated capacity, or approximately 248,083 MWh per year, to get an idea of what contribution this would make to New York's electric needs this

should be compared to the state's total generation rate, which in 2008 was 144,619,000 MWh. That is, by its own estimate the Stony Creek project could contribute only 0.17% to the state's needs, and a realistic estimate would put the contribution at between one third and two-thirds of this amount. It should be noted that no direct contribution to the electricity needs of Orangeville would be provided by the project. (Submittal 340 – Abraham, Gary)

Response: The DEIS describes the project's expected energy production in Section 1.1.2. Thirty percent is the approximate net capacity factor that Stony Creek expected for the Project with the 1.5xle turbine; it expects the net capacity factor with the 1.6-100 to be approximately 34%. Stony Creek determined these values using the power curve specifications for the proposed wind turbines, four years of on-site continuous meteorological data collected by Stony Creek, and estimates of "losses" for maintenance time, array losses[18], electrical losses, and other realistic losses for the Project. The net capacity factor is then calculated as the ratio of the estimated annual energy production of the project to its theoretical annual energy production if all turbines ran at their maximum rated output 24/7, taking all these factors into consideration.

The commenter has incorrectly applied NYSDERDA's[19] estimated "effective capacity" of 10% to the project's rated capacity in order to estimate annual energy production. "Effective capacity" is a value used by NYSIO to assign capacity rights to wind energy projects, and can be approximated as the ratio of capacity to peak power under worst case conditions (e.g. a summer day with high electricity demand and low wind). Therefore, effective capacity is not the appropriate factor to use when calculating total annual production, since annual production will reflect average, not worst case, conditions.

Stony Creek's net capacity factor estimate is an annual average value. Monthly net capacity factors will vary by season, with values tending to be higher than the annual average in the winter months and under the annual averagein the summer months. Combined, these monthly values will result in an annual average net capacity factor of 30% or 34%, depending on the model of turbine used (as stated in the DEIS and FEIS, respectively). Submittal 340 misuses the information in the cited 2005 GE report. GE correctly states that "Capacity factors of inland wind sites in New York are on the order of 30% of their rated capacity."[20] This is the same approximate value cited in the DEIS for the Project.

The commenter correctly calculates that the Project would generate 0.17% of all 2008 energy needs of the state. The statement that the Project would generate one third to two thirds of this is incorrect, because as discussed above, the expected annual average net capacity factor is 30%.

Note that the figure cited for energy consumption is the total electricity consumption in the state of New York. Residential electricity use accounts for 34% of this electricity use. Thus, the energy generated by the Project, based on a 34% capacity factor, would satisfy 0.57% of NYS residential electricity consumption. There are approximately 8 million residences in New York,

[18] "Array losses" are losses that result when an array of turbines is installed and the wind blows in a direction so that some of the turbines are downwind from other turbines and produce less energy as a result of the upwind turbine "taking" some of the wind energy away from the downwind turbines.

[19] The Effects Of Integrating Wind Power On Transmission System Planning, Reliability, And Operations Report on Phase 2: System Performance Evaluation Prepared for: The New York State Energy Research And Development Authority by: GE Energy Consulting March 4, 2005 (NYSERDA 2005).

[20] NYSERDA 2005, Section 7.4, page 7.16.

thus, on average, the Project will generate enough electricity to satisfy the needs of approximately 45,000 houses (0.57% of 8 million is a little over 45,000).

Many of the comments are based on a misunderstanding of NYISO's workings. The turbines will not be dispatched as a "peakers." The Project will compete in the NYISO wholesale electricity markets, bidding daily for the right to run and sell electricity. The Project will not be categorized as a "must-run" generator.

Submittal 340 states that the Project will not satisfy any of the direct electrical needs of the Town of Orangeville. However, homes, farms, and businesses in Orangeville receive their electricity from overhead electric distribution lines that run beside most of the roads in the town. These lines are supplied by a network of connections to an electrical substation – a network that will be fed by the Project.

6.1.2 Cost of Wind Energy (340, 379)

Section 1.1.3. of the DEIS addresses "Need and Market," asserting that the cost of electricity generated by wind power is "free," "zero cents per kilowatt hour." However, according to the current draft of the State Energy Plan, the price New Yorkers pay for renewable energy, including wind power, is "expected to range from approximately $16 to $32 per MWh, [which] is the incremental price New York must pay in order to make renewable generation competitive in a market place where price is primarily driven by fossil-fuel resources." "[M]arket intervention" such as "emissions cap and trade programs, renewable fuels standards and financial incentives" are necessary to allow wind-generated electricity to compete with cheaper fossil fuel generated electricity. The assertion in the DEIS therefore does not take into account real-world market forces. Ratepayers in Orangeville can therefore be expected to pay incrementally more for electricity if the Stony Creek project comes on line. (Submittal 340 – Abraham, Gary)

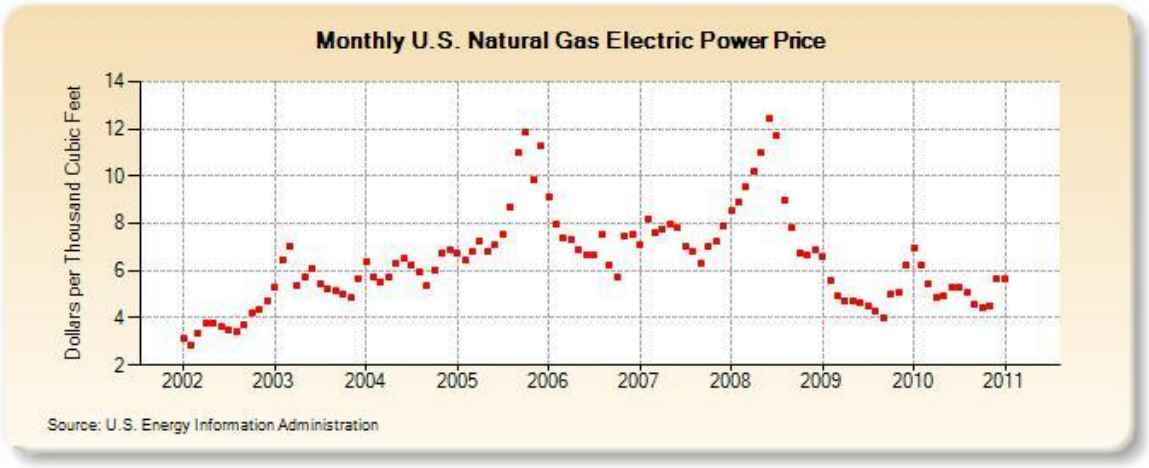
For all those that have not looked at their electric bills recently, I have two here because we pay to NYSEG, National Grid, it doesn't matter, included in your new electric bills as of a few months ago you'll read if you study them, renewable portfolio standard or RPS charge, a state mandated charge that funds renewable energy projects to achieve targets established by the public service commission. These will continue to increase because they are based on a percentage of what you consume. The more you consume, the more you pay. The percentage will be increased the more we construct. Without subsidy, you cannot construct wind turbines. (Submittal 379 – Zampogna, Joe (verbal))

Response: The point of the statement DEIS Section 1.1.3 is that ***the fuel*** for wind energy is a renewable resource with no cost. This is a true statement, and it is one of the reasons that wind energy is supported by so many state and federal governments. Electricity from wind energy projects, however, is obviously not free, as cost must be recovered to pay for the plant construction and operating costs.

The cost of electricity is affected by many variables, but in general electricity generated by a new wind power plant is competitive with, or less expensive than, electricity generated by a new plant burning natural gas – one of the most common fuels used for new fossil fueled power plants. The cost of electricity from a natural gas plant is highly dependent on the cost of natural gas, and can be relatively expensive when gas prices are high. The cost of electricity generated from wind is more predictable as there is no variation in the price of the fuel. For example, using 2010 capital and operating cost estimates developed by the U.S. Energy Information

Administration,[21] a new conventional combined cycle natural gas plant that operates 65% of the hours of the year would need to sell its electricity at a price ranging from $55/MWh to $108/MWh, assuming natural gas prices ranging from $4.50/mCF to $12/mCF.[22] As shown in Figure 8, this is a realistic range of gas prices that has been experienced between 2008 and 2011. As a comparison, a wind plant with a 34% net capacity factor and capital and operating cost rates from the EIS, would need to sell its electricity at a price of $70/MWh.[23]

Figure 8. Historical Natural Gas Prices – U.S. Monthly Averages for Electricity Production



Overall, consumers should benefit from additions of wind energy, because increased levels of wind energy in western New York should put downward pressure on wholesale power prices. To state it simply, the more energy available the lower the price.

The decision to itemize the costs of new wind projects on consumers' electric bills was made at the state level. By itemizing the costs of new wind projects and not simultaneously itemizing the costs of new natural gas plants, the itemization falls short of an "apples to apples" comparison. If new natural gas plants were being built in the state, and if utilities were to have separate charges on customers' bills to cover the cost of building these new natural gas plants, customers would find the surcharge for an equivalent amount of new natural gas generation would be higher or lower than the charges being shown on bills for new wind electricity, depending on the most recent price of natural gas.

The question of cost for wind energy was taken up by the NYS Department of Public Service (DPS) as part of the Final Generic EIS (FGEIS) completed for the proposed implementation of the RPS.[24] The FGEIS determined that while there may be a net financial cost of implementing the RPS standard over the next 9 years, 60% of the statewide cost would be recovered through the

[21] "Updated Capital Cost Estimates for Electricty Generation Plants," U.S. Energy Information Administration, Office of Energy Analysis, November 2010, Table 1, page 7.

[22] Assumptions include capital cost rate of $978/kw, $14.39/kw fixed O&M rate, $3.43/MWh variable O&M rate, and financing of capital costs over a 20-year period at an average cost of capital of 8%.

[23] Assumptions include capital cost rate of $2,438/kw, $28.07/kw fixed O&M rate, $0.00/MWh variable O&M rate, and financing of capital costs over a 20-year period at an average cost of capital of 8%.

[24] Final Generic Environmental Impact Statement In Case 03-E-0188 – Proceeding on Motion Of the Commission Regarding a Retail Renewable Portfolio Standard NYSDPS, August 2004

cumulative reduction in wholesale energy costs[25]. In addition, the FGEIS also determined that the minor statewide cost would be further mitigated by the decreased emissions of NOx, SO_2 and CO_2 into the state's atmosphere.

6.1.3 State RPS Targets (340)

Section 1.1.4 of the DEIS asserts that operation of the Stony Creek project would make a significant contribution toward achieving New York's "Renewable Portfolio Standard," which establishes a goal of purchasing 20% of the State's electricity from renewable energy sources by 2010. Specifically, the DEIS implies that by itself the Stony Creek project would provide 34% of the progress New York made by 2009 in achieving this "20 X 2010" goal.

This assertion is not borne out by NYISO's figures or the State Energy Plan, as discussed above, and seems on its face quite exaggerated. As noted above, assuming a generous 30% capacity factor, the project could generate only 248,083 MWh per year. If the State were to achieve 20% of its electricity generation by 2010, or 28,923,800 MWh (using 2008 data), this would be 0.86% of the State's electricity, a far cry from one-third (34%) of the 20% goal. The reality of limited power performance for the project is consistent with the DEIS acknowledgment that, despite its intermittent on-and-off character, its electricity generation would not affect the reliability of the regional electric grid. (Submittal 340 – Abraham, Gary)

Response: The question of benefits of renewable energy was discussed in depth at the state level, with ample opportunity for public comment, before implementation of New York's Renewable Portfolio Standard in 2004. Many of the comments in submittal 340 are more appropriately directed at the NY's RPS, and not at the specific Project proposed here. Nonetheless, responses to this submittal are provided herein.

The commenter's statements on percent generation and state targets appear to be in error. The state's 20% target for renewable energy applies to the electricity consumed by facilities owned and operated by the State of New York.[26] It does not apply to the all electric users in New York.

As originally implemented in 2004, the state's RPS goal was to generate 25% of the electricity consumed in NYS from renewable energy, with the recognition that in 2004 approximately 17% of the state's electricity was already being generated renewable energy sources such as the large hydroelectric facility near Niagara Falls. In a January 2010 order, the NYS Public Service Commission adjusted the RPS goal to require addition of renewable generation able to produce 10.4 million MWh per year by the year 2015.[27] As of March 2010, NYSERDA reported that contracts were in place for 4.3 million MWh per year, leaving a remaining goal of 6.1 million MWh per year.[28] With expected annual generation of approximately 280,000 MWh/year, the

[25] Note that the DPS analysis ended at the year 2013, but benefits of the program would continue to accrue for the lifetime of the installed generators, potentially exceeding the cost of the subsidies. (Wind turbine life expectancy is estimated to be at least twenty years.)

[26] Note that in the DEIS the states 20% goal for state facilities was incorrectly referred to EO101. It should have been EO111.

[27] State of New York Public Service Commission, "Order Establishing New RPS Goal and Resolving Main Tier Issues," Case 03-E-0188, Issued and Effective January 8, 2010, page 13.

[28] NYSERDA, 2010, Table 1, page 8.

Project will contribute approximately 5% of the remaining RPS goal. While the Project will not single-handedly make the state reach its renewable goals, it can be an important contributor toward meeting them.

6.1.4 National Energy Policy (340)

In addition to its asserted contribution to meeting State renewable energy policy goals, the DEIS claims that it would contribute to parallel national goals. However, no support is offered for this assertion. Instead, the DEIS simply notes that the federal government provides a generous "Production Tax Credit" each year for ten years for renewable energy technologies. The reality is that wind energy technology is one of the most expensive, although readily available renewable technologies, and so it is best able to take advantage of this tax credit. According to the U.S. Department of Energy, the Production Tax Credit for wind power cost the federal government two-thirds of a billion dollars in 2007 alone. According to a study by the conservative Manhattan Institute, total federal subsidies including the Production Tax Credit result in an effective tax rate for wind farms of -164%–that is, the federal government pays wind projects 1.64 times their net worth.

As noted in the DEIS, under the Obama Administration's Stimulus Bill enacted last year, this benefit has been converted into a lucrative one-time grant from the U.S. Treasury in the amount of 30% of the cost of a wind project. On September 1, 2009, under the first disbursement of the new grant benefit, the Canandaigua Power Partners wind farm in Cohocton (Steuben Co.) got a check for over $74 million from Treasury. It is estimated that this program will cost taxpayers $10 billion over the next three years.

Thus, nationally we pay an unreasonable amount for very little electricity generated by wind farms. And the electricity from wind farms must be backed up by a considerable amount of baseload power plant capacity. On balance, the DEIS has not shown it would contribute in any significant way to national energy goals, only that it would benefit from lucrative payments from the government. Whether these payments will translate into meaningful emissions reductions, improved electricity service or any other goal these subsidies are meant to achieve has yet to be demonstrated. (Submittal 340 – Abraham, Gary)

Response: The DEIS discussed state and national energy policies applicable to the Project, but a detailed review or debate of national energy policy is outside the scope of the SEQRA review for the Stony Creek Wind Farm. Nonetheless, responses to this submittal are provided herein. Assertions on the need to backup wind energy are addressed in FEIS Section 6.1.20. Impacts on emissions, oil consumption, and electricity generation/distribution are addressed in FEIS Sections 6.1.6-6.1.15 and 6.1.21-6.1.25.

Federal Tax Policies

The federal government has a long history of supporting domestic energy production that it views as critical to the public interest. Federal financial incentive programs for renewable energy can be traced to the Arab oil embargo of 1973, which in a matter of months turned the nation's attention to a previously unknown threat, the "energy crisis." In its wake, recognizing the need to encourage domestic energy alternatives, Congress passed the Energy Tax Act of 1978, providing a 10% federal tax credit on new investment in wind and solar generation

technologies, as well as the Public Utility Regulatory Policies Act of 1978 (PURPA), P.L. 95-617, requiring power utilities to purchase alternative electricity generation from qualified facilities.[29]

Congress established the Production Tax Credit in the wake of another threat to our nation's energy security, the first war in Iraq, with the passage of the Energy Act of 1992, P.L. 102-486.[30] In recognition of the importance of clean energy to our nation's energy security, economy and the environment, Congress has renewed the PTC five times since 1992.[31] A report by the Department of Energy estimated that the extension of the PTC from 2005-2015 would generate a savings of $37 billion to the American taxpayer in the form of reduced electricity bills, against a total "cost" over the same period in the form of foregone tax revenue to the U.S. Treasury of $17 billion.[32]

Reduced electricity bills are only one part of the story. Navigant Consulting estimated a near-term loss of $19 billion in investment and 116,000 jobs if the PTC was not extended.[33] The PTC's positive economic impact should be considered in the context of an annual "cost" to the U.S. Treasury of $526 million in FY 2007 for wind.[34]

Manhattan Institute and Effective Tax Rates

Care should be taken in using the term "effective tax rate" in this discussion. As noted in the cited Manhattan Institute report, "effective tax rates focus on the marginal cost of funding investments rather than on project cost."[35] As the Congressional Budget Office explains, "the difference between those two rates of return [the before- and after-tax returns] is known as the tax wedge; the ratio of the tax wedge to the before-tax return is the effective tax rate, ETR, expressed algebraically as: ETR = (before – after)/before."[36] A positive ETR will decrease the rate of a return on an investment; a negative ETR will increase the rate of return on an investment. In either case, an ETR does not equate to a subsidy of "1.64 times their net worth," as asserted by the commenter.

Effective tax rates are as difficult to decipher as the federal tax code is long (9 million words and counting), and will vary widely based on the particular circumstances of a capital investment. For example, the Manhattan Institute's report does not consider state and local tax obligations, such as the set payments the Project will make to the Town of Orangeville, Wyoming County and the school districts servicing the town. As currently proposed, the Payment in Lieu of Tax Agreement with the Wyoming County Industrial Agency and the Host Community Agreement revenues to the Town, County and schools from the Stony Creek Wind Farm would total over $740,000 per year. DEIS Section 1.1.8 provides more details on these local and regional economic benefits.

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[29] "Production Tax Credit for Renewable Electricity Generation", U.S. EIA, 2005, page 1. http://tonto.eia.doe.gov/oiaf/aeo/otheranalysis/aeo_2005analysispapers/prcreg.html

[30] "Federal Financial Interventions and Subsidies in Energy Markets 2007", U.S. EIA, 2008, page 35.

[31] Ibid

[32] "Production Tax Credit for Renewable Electricity Generation", U.S. EIA, 2005, page 4

[33] http://www.awea.org/newsroom/pdf/Tax_Credit_Impact.pdf

[34] "Federal Financial Interventions and Subsidies in Energy Markets 2007", page 33.

[35] "Taxing Energy in the United States: Which Fuels Does the Tax Code Favor?" in the Jan 2009 Energy Policy and Environment Report of the Manhattan Institute, page 4

[36] "Computing Effective Tax Rates on Capital Income," Congressional Budget Office, December 2006, page 2.

Federal Subsidies for Different Energy Sources

What is clear from the Manhattan Institute report cited in the comment is that the United States government continues to shape energy policy primarily through the tax code, as it has done for nearly a century. An analysis by Management Information Services, Inc., an economic consultancy, estimated that tax policy accounted for 45% of the $725 billion expended by the federal government to support energy development from 1950-2006,[37] followed by regulation with 20%, research and development at 19%, market activity at 10%, government services at 7% and disbursements with less than 0%.

Oil and gas alone received $436 billion or 60% of total federal energy expenditures from 1950 – 2006. Coal received approximately $93 billion or 13%, nuclear $81 billion or 11%, hydroelectric also $81 billion or 11%, and all renewable energy sources plus geothermal lumped together, including solar, geothermal and wind, received $50 billion or 7% of the total.[38]

Fossil-fuel powered energy sources continue to receive significant subsidies, such as the depletion allowance to encourage oil drilling, but their share of total federal energy expenditures is declining in response to a redirection of national energy priorities. Support for renewable energy increased from 17% of total expenditures in 1999 to 29% in 2007. In the same period, expenditures in support of natural gas, oil and coal production declined, according to the MIS analysis of Department of Energy data.[39]

Bi-Partisan Support for Renewables

Leaders from both sides of the "aisle" recognize the positive impact renewable energy technologies such as wind have on energy security, the economy and the environment. In his 2006 State of the Union Address, Former President Bush remarked:

> "Keeping America competitive requires affordable energy. And here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world.
>
> The best way to break this addiction is through technology. Since 2001, we have spent nearly $10 billion to develop cleaner, cheaper and more reliable alternative energy sources. And we are on the threshold of incredible advances."[40] – January 31, 2006

President Obama continues the U.S. Government's support for clean energy:

> "So we have a choice to make. We can remain one of the world's leading importers of foreign oil, or we can make the investments that would allow us to become the world's leading exporter of renewable energy. We can let climate change continue to go unchecked, or we can help stop it. We can let the jobs of tomorrow be created abroad, or we can create those jobs right here in America and lay the foundation for lasting prosperity."[41] -- March 19th, 2009.

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[37] "Analysis of Federal Energy Expenditures for Energy Development", Management Information Systems, Inc., September 2008, page 18. Report prepared for the Nuclear Energy Institute.

[38] Ibid page 17

[39] See exec summary of federal financial interventions and subsidies, page xii

[40] http://www.washingtonpost.com/wp-dyn/content/article/2006/01/31/AR2006013101468.html

[41] See http://www.whitehouse.gov/issues/energy-and-environment

6.1.5 Life Cycle Energy Payback - Danish Study (278, 291)

In the calculation of life-cycle emission impacts, it appears that the calculation of energy requirements for manufacture, installation, and decommissioning of the 59 WTGs was based on a 0.6 MW unit, without scaling up for the greater size presumably needed for a 1.5 MW unit (even allowing for possible increased efficiencies since the 1997 study). Is more recent data available? If not, scale the results up by a factor of (1.6 / 0.6) = 2.7. (Submittal 291 – Stantec)

We note that the Danish study of life cycle emission impacts used a smaller turbine (0.60 MW) than what is proposed for this project. It is not clear if the payback estimates were adjusted to account for the difference in turbine sizes. Additionally, it is not clear if accurate data exist for wind turbine manufacturing, transportation and installation for this project. The text should clarify the applicability of the analysis to the Stony Creek project. (Submittal 278 – U.S. Dept of the Interior)

Response: The DEIS estimated lifetime energy payback by scaling by the number of wind turbines, but as pointed out by the commenter, a more conservative approach might be to calculate life cycle energy payback by scaling by the generating capacity of the project. With this assumption, the construction and operation of the Project will require approximately 104,784 MWh of energy. At an average energy generation rate of 23,430 MWh/month, its estimated that the project will "payback" the energy needed for construction and operation in approximately 4.5 months (up from 2 months assumed in the DEIS).

6.1.6 Life Cycle Emissions Payback – Concrete Issues (121, 340)

The following concern was NOT properly addressed in the DEIS that was submitted to the Lead Agency for the Stony Creek Wind Farm Project in Orangeville. The wind tower foundations and other structures require the manufacture of large quantities of concrete. This process will release into the atmosphere a large volume of carbon dioxide. The release of carbon dioxide is considered a cause of the Greenhouse Effect, which is a cause of global warming. The production of electricity by wind power is touted as a method of reducing this same damage. A complete accounting of C02 emissions over the life cycle of project parts and materials from cradle to grave, and emissions from construction, including vehicle emissions, must be completed before any conclusions can be drawn about the project's contribution to greenhouse gas reduction goals. (Submittal 121 – Orlowski, Joseph)

Relying on a 1997 study by the Danish Wind Turbine Manufacturers Association, the DEIS asserts all the emissions generated in the course of manufacturing, installing and decommissioning wind turbines would be offset in two months of operations. This conclusion is highly dubious, as the capacity factor assumed is not disclosed, nor are any of the numerous assumptions regarding emissions of each segment of the life cycle of a wind farm. . . .

For example, cement production is a substantial source of greenhouse gas emissions, accounting for about 2.5% of total global CO2 emissions, or 5 billion of 220 billion tons emitted annually. These emissions are not primarily from the burning of fossil fuels in the production of cement but rather from the production of clinker, a component of cement, when calcium carbonate is transformed into lime. In terms of units of production, CO2 emissions from the production of cement are "in the range of 0.85 to 1.35 Mg of CO2 per Mg of clinker" and "900 to 1000 kg/tonne clinker." That is, every ton of clinker generates approximately one ton of CO2 emissions. Modern wind turbines with a rated capacity of 2.5 MW or more require about 500

cubic yards of concrete base per turbine, about 1.6 larger than current generation 1.3 MW turbines, which require slightly more than 300 cubic yards of concrete base per turbine and 70-106 tons of cement. That is, each modern turbine can be expected to require about 112-170 tons of cement. A 100-turbine wind farm will therefore involve emissions of up to 17,000 tons of CO2 generated by the concrete required alone. Concrete required for the Stony Creek project, as proposed, would generate one-third this amount. If less than eight percent of traditional power plant emissions are avoided, as suggested by the National Academy of Sciences, at a 20% electric generation rate, the project would take years to pay back its concrete emissions. (Submittal 340 – Abraham, Gary)

Response: The Danish study used to evaluate life cycle energy consumption in DEIS Section 1.1.7 and in FEIS Section 6.1.5 included energy required for the production of concrete and cement for the wind turbine foundations. The assumed capacity factor (calculated from the energy production presented in Table 8 of the Danish study) is 27% for an assumed terrain roughness of 1, and 21% for an assumed terrain roughness of 2. Applying the anticipated 34% capacity factor for the Project (see FEIS Section 6.1.1) to the life cycle energy consumption analysis would shorten the expected energy payback period and improve emission reductions. The capacity factor used in these calculations is discussed in FEIS Section 6.1.1.

However, lifecycle impacts can be evaluated on both an energy basis and on an emissions basis. The commenters are correct to note that a relatively large percentage of the total life cycle environmental impact of a wind turbine is from the emissions attributable to the foundation due to the processes involved in making cement.

Cement typically comprises up to 15% of concrete by weight. Based on the proposed Stony Creek foundation dimensions, a typical foundation will require approximately 300 cubic yards, or 600 tons of concrete. In some cases deeper foundations may be required, with up to approximately 600 cubic yards, or 1200 tons of concrete. The 56 foundations will together require 5,400 to 10,080 tons of cement, associated with emission of 5,400 to 10,080 tons of carbon dioxide. As discussed in FEIS Section 6.1.12, based on the 2008 New York State mix of electricity generators, the Project will offset 81,000 tons of carbon dioxide per year, for an emissions offset period of less than 2 months. The 8% figure cited by the commenter refers to baseload capacity offset in Germany and is not relevant to the calculation discussed here.

A 2009 study published in the Journal of Renewable Energy evaluates the environmental impacts from the full lifecycle of a 2 MW Gamesa onshore turbine across 11 impact categories.[42] It finds "the foundation is the component which most affects the environment, particularly the cement, which is the main cause of the impact in the IR [inorganic respiration] category."[43] The study assumes 700 tons of concrete would be used in the foundation of a 2 MW turbine. In addition to evaluating the environmental impact of the foundation, the study considers the environmental impacts of the tower, nacelle and rotor components from "cradle to grave," including manufacturing, transportation, installation, operation and decommissioning stages., excepting carbon dioxide emitted during clinker production. This study found a payback of period for all recoverable environmental impacts of approximately 12 months.[44] This calculation

[42] Martinez, E, et al. "Life cycle assessment of a multi-megawatt wind turbine," Renewable Energy: An International Journal, Volume 34, Issue 3, March 2009, pp 667-673. The 11 impact categories in section 2.5 on page 669.

[43] Ibid, page 672

[44] Ibid.

assumed a relatively low capacity factor of 23%.[45] Adjusting for the higher Stony Creek capacity factor, and not adjusting for the smaller Stony Creek turbine size, this would indicate the Stony Creek life cycle environmental impact payback would be nine months, including all emissions from fabrication of the concrete foundation with the exception of clinker production. With the additional emissions offset period discussed above, the total environmental impact payback period is still less than a year.

6.1.7 Comparative Risks of Electric Generation Technologies (291)

The last paragraph of the section states that "The NYSERDA study concludes that as a generation source, wind has the lowest cumulative potential risks of the six major assessed." It would be more accurate to state that According to the study, in each of the six life-cycle stages of the electricity generation technologies assessed, the impacts of wind were as low as or lower than any of the other technologies. Wind had zero impacts for resource extraction and fuel transportation, which were the cycles found to be the largest contributors to impacts on vertebrate species. (Submittal 291 – Stantec)

Response: The Lead Agency concurs with the comment as written. NYSERDA found that wind energy had environmental impacts as low as or lower than all other generation technologies assessed in each of the six life-cycle states evaluated.

6.1.8 Emissions Offsets - Plant Closings (003, 021, 034, 088, 094, 131, 133, 166, 329, 237, 249, 278, 341, 331)

With all the industrial wind turbines that have been erected throughout the country, I would like the names and locations of all power plants and/or nuclear plants that have been closed because of the proliferation of these industrial wind turbines. If the goal is for the use of this "supposed green energy" and the reduction of dependence on coal powered and other non-clean sources for the production of electrical power why aren't these industrial wind turbines used as the primary source when producing electrical power and the other facilities used as secondary sources? It wouldn't be because wind power is unreliable would it? (Submittal 131 – Jensen, Kathleen)

The DEIS discussion of Fossil Fuel Emissions Offset on page 5 is misleading in that there are no scheduled closings of coal, natural gas or nuclear generated power plants in the foreseeable future from the result of the production of wind energy. Invenergy also claims thousands of households could be supplied by wind energy. They neglect to indicate how much of the wind energy generated, and at what cost, will be available by the local residents who will feel the impact of a wind project the most. Statements in this section should be specific and truthful on the use of wind energy in the Final Environmental Impact Statement. The statement does not go far enough regarding conservation and does not include how wind energy impacts conservation. Conservation is a vital component in the use and reduction of energy resources. Wind energy does not stimulate a region's conservation efforts nor does it go far enough to promote those efforts. (Submittal 003 – Humphrey, Peter; 021 – Raab, Sherri; 034 – Jackman, Russell; 088 –

[45] Ibid, page 669. Capacity factor calculated by dividing nameplate capacity of turbine by the annual production figure of 4GWh noted on page 669.

Burgio, Helene; 094 – Dylag, M.; 133 – Dickinson, Darryl; 166 – Dickinson, Mary; 329 – Kaczmarek, Brian; 237 – Nevinger, Mary; 249 – Nevinger, James)

The only reason industrial wind power should exist today is for it to live up to promoters' claims that it will meaningfully help reduce greenhouse gas emissions (i.e. - C02) - not because of financial incentives offered by wind industry salesmen. Which one of us would buy any life-altering, major investment without first asking for proof of the salesmens' claims??? Since I can find no proof of any of the claims Big Wind uses to sell their product provided by Invenergy in the DEIS, please identify: What independent, transparent measurement has been done anywhere in the world demonstrating that wind projects have actually offset significant levels of C02 throughout an electricity grid system? (Submittal 331 – Barton, Mary Kay)

Response: Every kWh of wind energy generated by the Stony Creek project will satisfy demand for electricity that otherwise would need to be provided for by other generators in New York. Typically, the majority of generation in New York comes from fossil-fueled generators. Refer to Section 4.12 for a discussion of the deliverability study for the Stony Creek Wind Farm, including analysis of typical generators that could generate less to accommodate added generation from Stony Creek.

The comments assume electric power needs are stable or decreasing. According to the NYISO 2009 Reliability Needs Assessment, from 2008 to 2018 electricity demand (GWh) is expected to increase at an average rate of 0.8 percent per year, and a total increase over the forecast period of 8.2 percent[46].

Because electric generation will need to increase, projects like the Stony Creek Wind Farm do not always allow older dirtier plants to be shutdown. Depending on the situation, projects like Stony Creek may instead avoid the need to install new fossil-fueled generating plants to meet growing electric demand. In either case, the MWh from Stony Creek can help avoid use of fossil fuels that are typically used to generate electricity.

Electricity generated by the Project will be fed onto the local transmission system that supplies power to homes and businesses in Wyoming County and the surrounding region. Much of this electricity will physically flow into users in the local region. Excess electricity not consumed by local users will flow back into the power grid where it will help reduce the need for other new generation sources.

FEIS Section 6.1.1 discusses the energy that could be generated by the Project. FEIS Section 6.1.2 addresses the cost of wind energy. FEIS Section 6.3.4 discusses energy conservation as an alternative to the proposed Project. Adoption of energy conservation practices and deployment of wind energy are not mutually exclusive. Consideration of energy conservation measures is beyond the scope of this Project, but residents are encouraged to implement energy conservation practices in their own homes.

6.1.9 Emissions Offsets – Zero Sum Game (355)

I'm helping Invenergy with the development of the wind project recently. As I understand it, electricity generation is a zero sum game meaning that if you're generating from one source,

[46] NYISO, "2009 Reliability Needs Assessment Comprehensive System Planning Process," FINAL REPORT, January 13, 2009 (Table 3-1, 2009 RNA Base Case).

you're not generating from another and to me the real purpose of the wind energy facility is the fact that wind energy produced…I'm sorry, wind energy kept 62 million tons of carbon dioxide out of the atmosphere in 2009. The equivalent of taking 10 million cars off the road. (Submittal 355 – Mulcahey, Michael (verbal))

Response: Comment noted.

6.1.10 Emissions Offsets - Capacity Factor for Calculations (278)

Project benefits such as fossil fuel emission offsets are reported based on a 30 percent capacity factor. Likewise, life cycle emission impacts are based on this capacity factor. It would be more appropriate to base the expected benefits and life cycle impacts on the actual capacity factor of nearby wind energy projects such as the Wethersfield and High Sheldon projects. Using capacity factors from these projects should more accurately predict benefits and impacts. (Submittal 278 – U.S. Dept of the Interior)

Response: The emission and fossil fuel offsets are based on the specific characteristics of the turbines proposed for this project and on measured meterorological data from Stony Creek Wind Farm, and thus it's appropriate to use the capacity factor for Stony Creek in these calculations. FEIS Section 6.1.1 discusses the expected capacity factor for Stony Creek. Stony Creek's estimate of the net capacity factor is consistent with experience at other operating wind farms.

6.1.11 Emissions Offsets - NRC Report (278)

The DEIS indicates that the project will reduce sulfur dioxide, nitrogen oxide, carbon dioxide, pollutants and displace the use of fossil fuels. A recent report by the National Research Council (NRC 2007) found that wind energy projects do not deliver the environmental benefits typically described by project sponsors. For example, turbines generally produce at 30 percent of the rated capacity due to lack of wind (EIA 2004). The amount of electricity produced during hot summer months, and peak demand will probably be less because of lower wind speeds. The intermittent nature of wind results in electricity being generated only periodically and, therefore, other types of generating facilities must be operating to meet demand. Therefore, it seems inaccurate to state that this project will displace the use of fossil fuels at existing power plants.

The NRC also found that almost no sulfur dioxide or nitrogen oxide would be eliminated from the operation of wind energy projects. A portion of carbon dioxide emissions is expected to be reduced. In their report, the NRC noted that the maximum wind energy could contribute to the reduction of this greenhouse gas is only 4 percent. Interestingly, electric generating facilities only produce about 39 percent of all carbon dioxide emissions in the United States (EIA 2006). (Submittal 278 – U.S. Dept of the Interior)

Response: Contrary to what is suggested in the comments, the NRC report found that wind energy can reduce emissions by displacing fossil-fuel powered electricity generators. The referenced 2007 NRC study is a scientific evaluation of available information on wind energy's impacts on landscapes, viewsheds, wildlife, habitats, water resources, air pollution, greenhouse gases, materials-acquisition costs, and other impacts, with particular focus on wind projects in

the Mid-Atlantic Highland region.[47] As discussed in the report, precise calculation of future emissions offsets is not possible due to uncertainty in forecasting future fuel prices, electric grid operations, and regulatory regimes. However, appropriate calculations can be done using best estimate values, such as was done in the Stony Creek DEIS and in the NRC study.

CO2 Emissions

The NRC study does not consider the impacts of a single wind farm. Rather, it calculates potential U.S. wind energy emission offsets assuming that wind energy grows to supply 4.5% of all U.S. electricity needs by 2020.[48] Under this assumption, the NRC study finds total 2020 U.S. CO2 emissions from electricity generation would be reduced by 4.5%.[49] Contrary to the commenter's statement, the NRC study did not report that this level was a maximum potential greenhouse reduction from wind energy (nor did it say it was "only 4%").

The NRC's evaluation of CO2 emissions offsets is consistent with the DEIS's evaluation of CO2 offsets for the Stony Creek Wind Farm. The NRC evaluation assumes every MWh of wind energy will displace 1,223 lb of CO2. DEIS Section 1.1.7 assumes that every MWh of wind energy will displace 892 lb of CO2.[50] Both the NRC study and the DEIS recognize that electricity from wind will reduce CO2 emissions, but they use appropriately different rates for these CO2 reductions to reflect their different geographic areas. The NRC uses appropriate values for a U.S.-wide evaluation; the DEIS uses appropriate values for evaluation of a New York project.

Updated values for the Stony Creek Wind Farm that are based on the most recently available New York average emissions rates are provided in FEIS Table 31.

NOX and SOX Emissions

We agree that on the subject of NOX and SOX emissions the NRC study came to less optimistic conclusion than the DEIS. The DEIS emissions offset analysis used the standard assumption that new wind energy could reduce consumption of fossil fuels and the NOX and SOX associated with burning these fuels. The NRC study assumed that future legislation would cap NOX and SOX emissions from all power plants, hence no further significant reductions could be made by additions of clean energy sources to the nation's fuel mix. However, the study also notes that the results of the analysis could change if future legislation establishes "set-asides" which provide a mechanism to credit installation of non-polluting electricity generators for NOX and SOX emission reductions.

Other Topics

The NRC study does not appear to make the blanket conclusion that wind projects do not deliver advertised emissions offsets. The study (i) concludes that emissions offsets estimates are highly

[47] National Research Council. of the National Academies,. 2007. *Environmental Impacts of Wind-Energy Projects*, 2007.

[48] NRC study, page 45.

[49] NRC study, page 45 and Table 2-5 on page 44. Note the NRC study assumed that without wind energy, in 2020 electricity would be generated from a U.S. mix of electric power plants and emissions rates that the Energy Intelligence Administration (EIA) forecasted as most likely for 2020 in its Annual Energy Outlook for 2006.

[50] DEIS Section 1.1.7, page 6, first bullet. 0.892 lb/CO2/kwh = 892 lb/CO2/MWh. Note also that in DEIS Section 1.1.7, bottom of page 8, potential CO2 displacements are reduced by 10% to account for energy deliverability concerns raised by some parties, resulting in an effective CO2 displacement rate of 802 lb of CO2/MWh.

uncertain,[51] and (ii) reports that backup information was not provided in several studies it reviewed,[52] but neither of these points equate to the blanket statement made in Submittal 278. Regardless, the emissions offsets for the Stony Creek Wind Farm that have been presented in the DEIS and FEIS are transparent and based on appropriate assumptions.

The NRC study correctly points out that wind projects produce generally 30% of rated output. This is consistent with the capacity factor discussed in FEIS Section 6.1.1.

The capacity factor of 30% is an annual average factor that considers high wind winter months and low wind summer months. Use of an annual average value is a reasonable approximation for an emissions offset calculation.

The claimed need for backup power is discussed in DEIS Section 1.1.6. Basics of fossil fuel displacement are discussed in FEIS Section 6.1.8.

6.1.12 Emissions Offsets - Fuel Mix for Calculations (341)

Page 5-9 – the estimate of fossil fuel emissions offsets is based on 2002 average fuel mix in NY State. DEIS provides a discussion of potential 10% reductions in those emissions reductions based on transmission line ratings and a "bottled generation" facilities scenario. There have been significant changes to the NY State generating fleet since 2002 which should be considered in assessing fossil fuel emissions reductions as reported in the DEIS. Stony Creek should provide the studies to support the claimed reductions. (Submittal 341 – NYS Dept of Public Service)

Response: Table 30 illustrates the differences in the fuel mix between the 2002 mix used in the DEIS study and the most recent mix available.

Table 30 New York Electric Generation Fuel Mix for 2002 and 2008

Generation Source	2002 Generation (GWh)	2008 Generation (GWh)	2002 Fuel Mix (% of total)	2008 Fuel Mix (% of Total)
Coal	23,239	19,154	14.6%	11.6%
Natural Gas	38,451	43,856	24.2%	26.5%
Petroleum Products	11,534	3,745	7.3%	2.3%
Conventional Hydro	24,612	26,481	15.5%	16.0%
Pumped Storage Hydro	1,601	1,020	1.0%	0.6%
Nuclear	39,617	43,209	25.0%	26.1%
Net Imported Electricity	17,326	23,900	10.9%	14.4%
Waste	1,878	1,903	1.2%	1.1%
Landfill Gas	198	533	0.1%	0.3%
Wood	206	560	0.1%	0.3%
Wind	82	1,251	0.1%	0.8%
Total	158,744	165,612	100%	100%

Notes:

2002 and 2008 Generation Data is from "Patterns and Trends: New York State Energy Profiles: 1994-2008", NYSERDA, published January 2010, Table 2-5, page 27.

[51] NRC study, page 46.

[52] NRC study, box 2-5, page 43.

Table 31 provides updated emissions offset calculations for the subject project using the latest available data for New York's mix of electric generators. FEIS Section 4.12 discusses an energy deliverability study that gives further insight on power plants that might be backed down in order for the proposed project to deliver its energy to the transmission grid.

Table 31. Air Emissions to Generate Annual Electricity Expected from Stony Creek Wind Farm

Generation Source	CO2 Emissions (tons) (greenhouse gas)	NOx (tons) (forms smog)	SO2 (tons) (causes acid rain)
Stony Creek Wind Farm	-	-	-
Coal Plant	271,300	595	1,350
Natural Gas Plant	147,200	211	37
Nuclear Plant	-	-	-
Hydro Plant	-	-	-
U.S. Generating Mix – 2000	172,600	367	749
NY Generating Mix – 2002	98,700	189	323
NY Generating Mix – 2008	81,000	148	217
NY Generating Mix – NYSERDA 2002 information used in DEIS	103,700	139	376

Notes:

This table shows the annual emissions that would be expected by producing 248,000 MWh of electricity from various means. 248,000 MWh is the expected annual output of the Stony Creek Wind Farm, as reported in the DEIS. Emission offsets from use of the 1.6-100 wind turbine would be proportionally greater.

Emission rates for coal plant, natural gas plant, and U.S. generating mix are from 2006 EPA eGrid report, as reported in 2007 NRC Report "Environmental Impacts of Wind-Energy Projects," Tables 2-5 and B-1.

Emission rates for the 2002 and 2008 NY Generating Mixes are determined using the generation mixes in Table 30 and values for plant emissions available in the 2007 NRC report. Because the 2007 NRC report does not include emission rates for all sources used in NY, the following assumptions are made: (i) imports and pumped storage were all from hydro power, (ii) petroleum, wood, and waste incineration had emissions rates similar to that from coal; (iii) landfill gas has emissions similar to that for natural gas.

Emissions shown based in this table for NY Generating Mix -- 2002 differ from the values in the DEIS. The DEIS values were based on NYSERDA information that may have used different assumptions on emission rates. Values in this table are fully referenced and traceable.

6.1.13 Emissions Offsets – Backup Power Requirements (340)

Electric power plants are responsible for 40 percent of CO2 emissions in the U.S., more than any other sector, including the transportation and industrial sectors. Coal power plants are responsible for over 80 percent of these emissions. Thus, if wind power could make a significant dent in our need for coal-fired (or natural gas fired) power plants, they could offset such emissions.

Section 1.1.7. of the DEIS asserts that "[t]he generation of electricity from wind offsets emissions from fossil fuels" on a one-to-one basis, where each kWh of electricity offsets the amount of pollution that is produced by a kWh of electricity generated by fossil fuels. Thus, operation of the Stony Creek project would offset the same amount of CO2 and air pollutants as would be emitted by power plants burning fossil fuels.

This view is not shared by many energy analysts. The primary reason why wind power is unable to offset CO2 and air pollutant emissions from other power sources on a one-to-one basis is that wind power is intermittent and thus requires backup power capacity from more reliable sources like coal-fired and natural gas-fired power plants. Put differently, electricity consumers need power on demand, and wind power not only is unable to provide such power; the more wind power is integrated into the grid, the more backup power is needed that can be called upon at a moment's notice.

For this reason, European grid operator (and wind farm developer) E.On Netz reports that "wind farms can only replace traditional power station capacities to a limited degree," specifically about four percent because reliable generation capacity must be operated in reserve.

The most comprehensive effort to estimate the potential for wind farms to displace greenhouse gas emissions in the foreseeable future, provided by the National Academy of Sciences, finds that a substantial amount of wind power needs to be backed-up by other generators, depending on the distinctive features of the transmission system into which wind power is integrated:

. . . the cost of [wind energy's] intermittency (in terms of back-up or reserve requirements) will be less if the generation mix is dominated by power plants with fast ramp rates (gas, hydropower) than if it is dominated by coal or nuclear plants, which have high capital costs and slow ramp rates. . . . Denmark, for example, has access to substantial hydroelectric capacity, which it relies on to balance the intermittent output from wind-energy installations.

Accordingly, the Academy estimates that by 2020 wind-generated energy could displace about 8% of the capacity of more polluting sources, and could displace no more than 2.25% of U.S. anthropogenic CO2 emissions; and using more wind power increases rather than decreases the need for reserve power, further reducing wind power's net displacement of CO2.

Government policies promoting wind power reduce pollution offsets even further. In states with a Renewable Portfolio Standard like New York, the RPS program creates a closed market for renewables with the result that wind energy does not avoid emissions from other energy sources because it completes only with other, zero-emissions sources in the closed market. Thus, "no avoided air emission benefit exists if wind generation displaces another renewable project generation to meet a state (or future national) renewable portfolio standard."

Finally, unless a region relies almost entirely on coal for power, grid operators do not turn first to coal-fired power plants to accommodate intermittent power sources. Instead, natural gas-fired or hydroelectric plants are directed by the grid operator to ramp up or down first because their ability to do so is much greater than that of coal-fired plants. In states like New York where substantial hydroelectric power is integrated into the grid, wind power may displace proven low emissions sources.34 Little or no emissions reductions from coal combustion can therefore be realized as a result of greater integration of utility scale wind energy.

Thus, whether wind power can offset emissions from other power plants, and by how much, is a much more complicated question than the simplistic one-to-one offset theory asserted in the DEIS. The best information we have is that wind power can offset only a small fraction of the emissions that would be created by the same amount of electricity from other sources, and perhaps cannot offset a significant amount. (Submittal 340 – Abraham, Gary)

Response: The 4% guaranteed capacity figure cited in the 2005 E.O. Netz report is theoretical, based on projected future wind capacity increases in Germany and absent concomitant development of storage technologies or methods. The commenter errs in stating that *"the Academy estimates that by 2020 wind-generated energy could displace about 8% of the capacity of more polluting sources"*. The 8% figure refers to guaranteed capacity cited in 2005 by the same E.O. Netz report for Germany. Neither the 4% nor the 8% figure is a direct measure of potential emission reductions due to generation of electricity by wind, nor an accurate reflection of the backup generation requirements in New York in 2010. In fact, no backup power will be required due to this project. A 2005 study General Electric evaluated the operational effects of adding up to 3,300 MW of wind energy to the New York power system.[53] The study found that 3,300 MW of wind energy could be added to the New York system with no new backup power requirements and only minor adjustments to existing planning, operation, and reliability practices. As of the end of 2009, approximately 1,300 MW of wind energy was in operation in New York State. Thus an additional 2,000 MW of wind should be possible in New York without requirements for backup power sources. As the proposed Project is less than 2,000 MW, it will not require new backup power sources.

The cited report by the National Academy of Sciences' National Research Council, also known as the 2007 NRC study, concluded that use of wind to supply 4.5% of U.S. electricity needs would reduce CO2 emissions due to generation of electricity by 4.5%, reflecting the preponderance of fossil fuel generation nationally. However, both the DEIS and updated calculations in FEIS section 6.1.11 present emission rates based on the actual mix of generating facilities in New York, including zero-emission facilities such as nuclear and hydropower plants. The NRC estimate of a 2.25% reduction in total US CO2 emissions (or 4.5% of CO2 emissions due to generation of electricity) was not an estimated maximum reduction, but was based on a scenario in which wind provides 4.5% of U.S. electricity generation.

The question of emission offsets due to government regulation has been studied by various states as part of their decisions to enact Renewable Portfolio Standards (RPS's). In New York, this issue was discussed in the FEIS for the RPS, issued by the Department of Public Service on August 26, 2004, Case 03-E-0188. This document states:

"The Action of developing and implementing an RPS for electric energy retailed in New York State will result in environmental benefits in the form of emission reductions from fossil-fuel facilities that are expected to operate less than they would without an RPS policy."

The question of whether the Stony Creek Wind Farm will offset renewable generation or other types of generation was addressed in DEIS Section 1.1.7 and is further addressed by the deliverability study for this Project that is discussed in FEIS Section 4.12. As shown by the deliverability study, the Stony Creek Wind Farm is expected to displace fossil fuels for most of the typical operating scenarios. The hours in which the Project would displace other renewable is likely very low, and thus the emissions offset assumption in this FEIS are valid.

The studies in the DEIS and FEIS confirm that the proposed project can be expected to produce benefits of reduced fossil fuel consumption and reduced greenhouse gas emissions.

[53] "The Effects of Integrating Wind Power on the Transmission System Planning, Reliability, and Operations", issued on March 4, 2005, by General Electric, prepared for NYSERDA.

6.1.14 Air Pollution (369)

Our country uses the most fossil fuel with the conceivable exception of China and they are going completely nuts. My son went to the Olympics as a spectator in China and he said people there they walk around with masks on. That's how bad the pollution is. (Submittal 369 – Kinney, Kevin (verbal))

Response: Comment noted. One of the benefits of the proposed project is that it will generate electricity with zero to little air emissions.

6.1.15 Oil Displacement (339)

How does wind power in Sheldon or Orangeville reduce my dependence on oil for my car or to heat my house? (I heat with propane, by the way.) (Submittal 339 – Fugle, Joseph and Cheryl)

Response: The Stony Creek Wind Farm will not affect commenters' dependence on gasoline or propane fuel for their automobiles or home. However, by satisfying a portion of New York's increasing demand for electricity, the Project will diversify the region's fuel mix and reduce its reliance on any one energy source, such as generators powered by fossil fuel combustion.

6.1.16 Climate Change Hoax (102)

Here's some info on climate change (hoax). Soon money to fund wind energy projects will dry up. (Attachment: National Review article, 4 pp.) (Submittal 102 – Dylag, M.)

Response: The National Review article provided by the commenter discusses climate change and the "hockey stick" metaphor used to describe global temperature fluctuations. This article, and more broadly the "climate change debate" are outside of the scope of the SEQRA review of the Project. Although funding for the Stony Creek Wind Farm is outside the scope of the SEQRA review of the Project, Stony Creek has indicated that the project is a competitive project that can meet the demands generated by the NYS RPS, that it is financially viable with current federal laws in place through at least the end of 2012, and that private financial markets are interested in investing in projects such as Stony Creek.

6.1.17 1,000 MW of Wind Power Not Significant (191)

On February 19, 2009 the New York State Independent Operator reported 1,000 megawatts was dumped into the grid from wind power. Sounds like a lot but keep in mind this was on a day we New Yorkers were using 21,000 megawatts of power. This would be considered a slow day for NY. During summer months, we are using 39,000 plus megawatts of power. At this time in hand it was confirmed that this 1,000 megawatts was not a sustained output. Did this output last five minutes, ten minutes? Who knows? So - did they actually put that coal fire out, or did they tell that nuclear plant to ramp down for a moment? Not hardly. At best they ramped down some hydro power. (Submittal 191 – Sahrle, Gerald, 350 – Sahrle, Gerald, verbal)

Response: The exact generation mix during the time period referenced in the comment is difficult to specify, but the introduction of even 1,000 MW of wind energy has significant environmental benefits. If wind energy was not producing 1,000 MW at this time, it would have been necessary to generate this electricity using other fuels. By scaling the emission levels provided in FEIS Table 31, it can be estimated that if during this hour the 1,000 MW were

generated by the standard 2008 New York mix of generation, it would have created approximately 418 tons of carbon dioxide, 1,789 pounds of sulfur dioxide, and almost 1,200 pounds of nitrogen oxide. Because this electricity was generated by clean wind energy, none of these pollutants were emitted into New York's air.

6.1.18 New York Doesn't Need More Renewable Energy (340)

The purpose of the Invenergy proposal is to generate renewable energy for the regional electric grid. It is therefore crucial that the Board get to the bottom of the question, whether in order to provide for our renewable energy needs, we need another wind farm. Among other things, the Board therefore needs to dispassionately consider the facts about how utility-scale electricity is generated and why we need more renewable energy. This kind of inquiry is appropriate because the DEIS relies on assertions about the benefits of wind farms in general.

Renewable energy in New York today

There is no explicit state or federal policy to promote wind power. The United States and New York has adopted a policy to promote renewable energy, and wind power has been developed to explore whether it can meaningfully contribute to achieving that goal. It is not reasonable to simply adopt the wind industry's assertions that it can and will make a measurable contribution to the mix of renewables we need.

New York is already a leader in the nation in terms of achieving a substantial portion of electricity from renewables. According to the New York Independent System Operator (NYISO), which manages the state's electric grid, about 18 percent of the electricity generated in New York comes from emissions-free hydropower. This compares to the national average of about 12 percent of electricity from renewables, which includes 10 percent from hydropower. Although not counted as a "renewable energy" source, another 30 percent of New York's electricity is generated in New York by emissions-free nuclear energy. Against this background, new renewable energy technologies have a high burden to meet to show they can contribute to our need for additional renewable energy.

Concern about power plant pollution centers primarily around the emissions of greenhouse gasses, which are linked to climate change and may, over time, result in catastrophic alteration of the environment. For this reason, the U.S. and New York are committed to development of renewable energy sources that would emit much less emissions than traditional power plants.

The most important greenhouse gas to reduce is carbon dioxide (CO2) because of the long period of time CO2 remains in the atmosphere compared to other greenhouse gasses, and because since the Industrial Revolution, a short two or three centuries ago in climatological time, the concentration of CO2 in the atmosphere has risen steadily, threatening to reach "tipping points" beyond which climate scientists believe global warming and climate change that results from global warming cannot be controlled.

Electric power plants are responsible for 40 percent of CO2 emissions in the U.S., more than any other sector, including the transportation and industrial sectors. Coal power plants are responsible for over 80 percent of these emissions. Meaningful reduction of these emissions is therefore the primary test by which any renewable energy technology must be measured. Coal still supplies most of our electricity nationally, and in New York coal supplies 13 percent of our

electricity. Natural gas emits about half as much CO2 as coal combustion. When natural gas is added to coal, nearly half of New York's electricity is generated by polluting fossil fuels.

If Invenergy's proposed Stony Creek Wind Farm would not meaningfully reduce CO2 emissions by displacing our need for coal-fired power plants, the Board must find that the need for the project is diminished. (Submittal 340 – Abraham, Gary)

Response: In contrast to what is suggested in the comment, there are numerous explicit state and federal policies promoting wind power - including the specific incentives this commenter refers to other parts of his submission. The 2009 New York State Energy Plan specifically states as a major strategy "Support development of in-state energy supplies, including clean renewables such as wind/" Please refer to DEIS Section 1.1.4 and FEIS Sections 6.1.3 and 6.1.4 for discussions of state and national energy policies.

DEIS Section 1.1.7 and FEIS Section 6.1.12 discuss emissions offsets using historical fuel averages. These calculations consider the role of nuclear and hydro in the overall fuel mix in New York. The commenter is correct to note that New York has a lower average emission rate for electricity generation than the United States as a whole. However, fossil fuel-powered plants in New York still emit 48.7 million tons of greenhouse gases each year.[54] Thus, it is clear that the State can benefit from deploying more renewable energy as a means of displacing emissions generated by fossil-fuel powered plants.

6.1.19 Wind Data (010, 022, 036, 066, 095, 131, 135, 153, 212, 305, 320, 234, 247, 278)

Project siting is discussed in Section 1.3 and states that land owner support, electric grid connection and sufficient wind resources are needed for proper turbine placement. However, the text does not include any data that identifies the wind resources of the project area. Including this information in the DEIS would help the reader understand the turbine siting process and also alternate locations within the project area. (Submittal 278 – US Dept of the Interior)

The Department of Energy has also put out a map dated 2008 showing wind strengths throughout the country. Guess what? Our area only shows wind strength as rated fair. This is the lowest on their scale of wind strength. (Attachment: Wind Resource Map, 1 pp.). (Submittal 131 – Jensen, Kathleen)

Where can we find the data on the meteorological towers that have been installed by Invenergy LLC in Orangeville? To date, I have not seen anything published to show there is even sufficient wind in our area to make this a viable project. Please provide the public (in Orangeville) with the data taken from these meteorological towers. It was reported that a wind company that was planning to construct a wind farm in the Town of Attica decided against building due to the lack of wind. It would seem that taxpayers would have a right to review this information. (Submittal 022 – Raab, Sherri; 010 – Humphrey, Sally; 036 – Tagliaferro, David; 066 – Hopkins, Mary Jo; 095 – Dylag, M.; 135 – Dickinson, Darryl; 153 – Dickinson, Mary; 212 – Makson, Paul; 305 – Ramsey, Donna; 320 – Wilkinson, Ted; 234 – Nevinger, Mary; 247 – Nevinger, James)

[54] "Patterns and Trends, New York State Energy Profiles: 1994-2008," page 3.

Response: Stony Creek's parent company, Invenergy Wind LLC has developed, financed and now operates over 20 commercial-scale wind energy projects across the United States, including the High Sheldon Wind Farm in Wyoming County, New York. Stony Creek has indicated to the Lead Agency that they do not intend to construct a project that is not technically or economically viable. Further, Stony Creek has indicated that they have spent a significant amount of effort to ensure the Project has been sited to maximize benefits associated with the local wind resource while minimizing negative impacts to the community. The project's capacity factor is discussed in DEIS Section 1.1.2, and in FEIS Section 6.1.1.

Maps intended to indicate wind resources at the national scale do not necessarily provide sufficient resolution to show details of the local wind resource. FEIS Figure 9 shows wind speeds predicted in the Town of Orangeville using state of the art computer modeling techniques. In this map, areas shaded green, pink, or orange are considered to be potentially commercially viable wind resources. Stony Creek has supplemented information in the Figure 9 with detailed measurements that corroborate the wind map and provide information needed to demonstrate financial viability to potential investors. Based on information in the wind map and collected by on-site measurements, Stony Creek believes that the wind resource in the proposed turbine locations is sufficient to support a viable wind energy project.

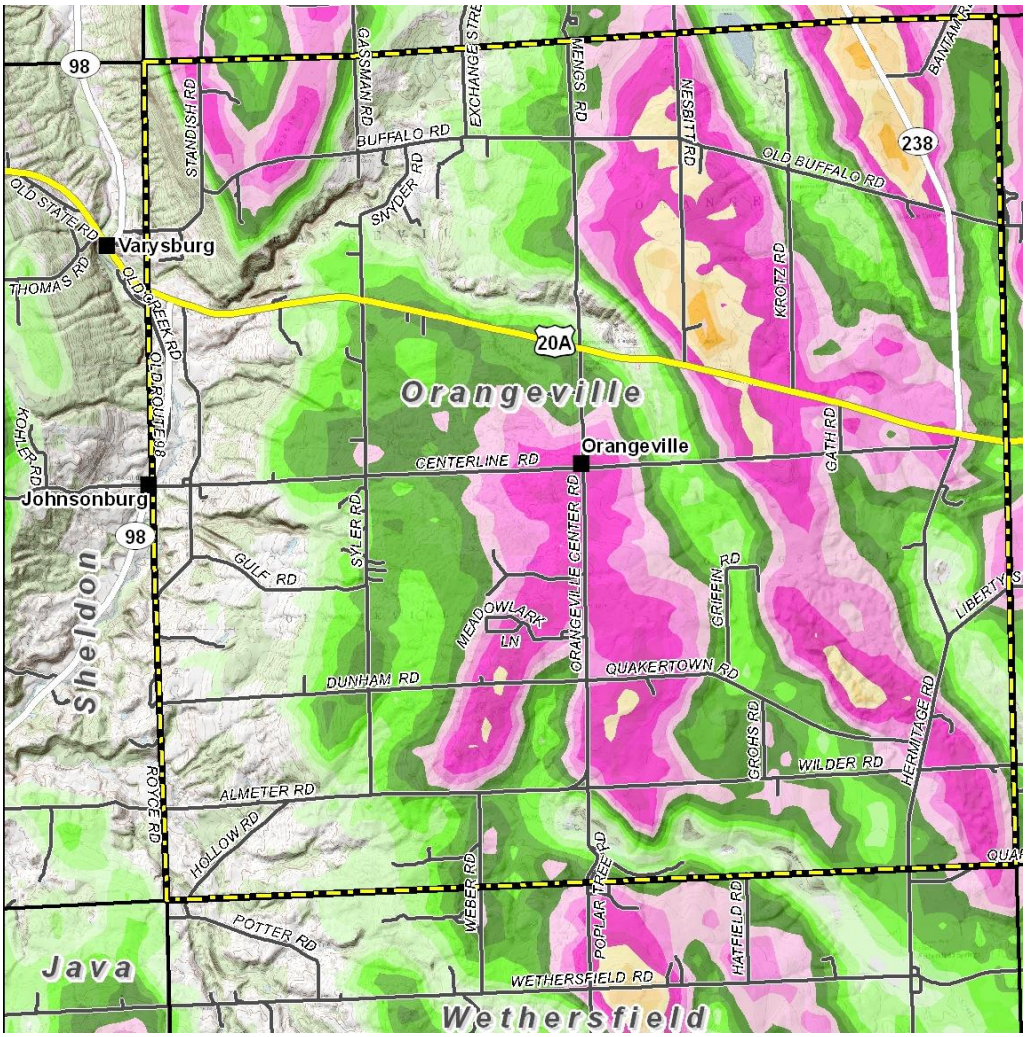

Figure 9. Town of Orangeville Wind Map

6.1.20 American Thinker Article on 1980's Wind Industry (097)

Is this true? (Turbines are uneconomic and destabilizing to the grid.) (Attachment: American Thinker article, 3 pp.) (Submittal 097 – Dylag, M.)

Response: The commenter submitted an American Thinker article that refers to a number of common misconceptions about wind energy that were based on the first generation of wind turbines installed almost 30 years ago in California. None of these are applicable to the proposed project. Specifically:

- First, the article discusses the reliability issues and impacts of the first generation of wind turbines deployed primarily in California in the 1980s. It is hard to underestimate the improvements in turbine design since that point in time. Modern commercial scale wind turbines, such as the GE 1.5xle and 1.6xle turbines proposed for the Project, produce dramatically more power, at lower cost, with significantly fewer reliability issues and environmental impacts than the first generation of turbines. The GE 1.5MW turbine is the world's most deployed wind turbine, with over 13,000 units in operation worldwide. Projects typically run with availabilities averaging 95% (that is they are available to produce some level of electricity 95% of the hours of the year).
- The article also discusses environmental impacts of the earliest wind projects in the 1980's. The wind industry has learned from decades of experience to minimize environmental impacts through proper siting. Stony Creek has performed extensive environmental reviews for the subject project, as discussed in the DEIS and this FEIS.
- The article discusses state and federal incentives. These are outside the scope of this SEQRA review, but are addressed in FEIS Sections 6.1.3 and 6.1.4.
- The article discusses economic viability of wind energy. FEIS Section 6.1.19 discusses economic viability of the Stony Creek Wind Farm.
- The article discusses abandonment of wind turbines. The ability to generate electricity with no fuel cost and the availability of Project infrastructure (foundations, ECS, etc.) installed at considerable cost by Stony Creek will justify ongoing investment in equipment maintenance, repairs, or replacements. Mechanical maintenance is not expected to be a reason to decommission or abandon the plant. In contrast to what is suggested in the article, Stony Creek will not be permitted to cease operations and abandon the Project. As noted in DEIS Section 2.3.3 of the DEIS, the Town of Orangeville regulates the construction and operation of Wind Energy Conversion Devices/Farm through Section 1116 of the Zoning Code. As part of its review of proposed Project, the Town of Orangeville must also review the Project's decommissioning plans. Decommissioning plans are discussed in DEIS Section 3.17, DEIS Appendix I, and FEIS Section 6.31.
- The article states that wind turbines require back-up power generation to avoid destabilizing the utility grid. Back-up power requirements for Stony Creek are discussed in FEIS section 6.1.13.

6.1.21 Transmission Line Rights (278, 291)

Section 1 Project Purpose, Needs and Benefits – Electricity generated from the project will be carried on the Stolle-Meyer 230kV line found within the project area. Transmission capacity is discussed in terms of existing wind energy projects that connect to this line. However, Table 1 and the text do not discuss other generating sources that use this line or may potentially use it in the future. Additional information should be provided on this issue. (Submittal 278 – US Dept of the Interior)

Response: DEIS Table 1 listed all projects that connect directly to the transmission line between the Stolle Road and Meyer substations. The only projects that connect directly to this segment of the transmission line are wind projects, thus only wind projects are listed in the table. There are no other known planned potential future uses.

FEIS Section 4.12 discusses the ability of Stony Creek to deliver energy to the transmission grid.

The Federal Energy Regulatory Commission (FERC) requires transmission owners to provide open access to the electric transmission system that has been built using rate-payer dollars, including the transmission line that runs through the Project Area. The transmission system is operated as an open access system where generators do not have fixed "rights" to the transmission line (and future projects, which are mentioned in the comment, certainly do not have guaranteed rights to the transmission system). Access to the system is governed by tariff and is on a first-come, first-served basis in terms of responsibility for funding upgrades to ensure reliability. Thus, Stony Creek, if built and interconnected to the grid, would have the same rights to transport power on the Stolle Road – Meyer transmission circuit as other generators who use the line to transport power to other markets. The hourly selection of which plants generate, and hence are allowed to have their power flow on the transmission grid, is done on an economic dispatch basis where the lowest price, most competitive generators are selected to run. Stony Creek plans to compete in this competitive wholesale electric market.

As mentioned above, FERC does require however, that new connections to the transmission system be reviewed to ensure their addition to the grid does not reduce system reliability. The review of new projects is done through a FERC-approved "interconnection process" that in New York is managed by the NYISO pursuant to Attachments S and X of its Open Access Transmission Tariff. As discussed in Section 6.1.25, Stony Creek has applied to the NYISO for interconnection and is going through the FERC-approved process to evaluate the ability of the project to interconnect without impacting reliability of the transmission system. All potential impacts of the interconnection have been considered in this review.

The Purpose of DEIS Table 1 was to demonstrate that the transmission system, on a local level, would allow to project achieve the emission offset benefits described in the DEIS and FEIS. DEIS Table 1 is successful in doing this: it shows that the existing transmission system has capacity to handle output from all wind projects currently connected to it or planned to be connected to it in the near future.

Since the DEIS was completed, Stony Creek has performed a more involved study of the transmission system to evaluate whether regional "bottlenecks" in the system could be expected to reduce the Project's emissions offset benefits. This study, known as the "energy deliverability" study is discussed in FEIS Section 4.12.

6.1.22 Available Transmission Capacity (291)

Please provide further discussion of whether the estimated unused capacity of the Stolle-Meyer transmission line is adequate. Is it typical to only have 14.3 MW of unused capacity (see Table I)? (Submittal 291 – Stantec)

Response: It is not unusual for a transmission line to have local generation that approaches the rated limits as is shown in DEIS Table 1.

The transmission system is a dynamic system where the energy flowing on each transmission segment varies constantly with changes in demand, generator output, and availability of transmission system segments (i.e., if a transmission line is taken out of service for maintenance or repair, the energy normally travelling down that line will have to flow on other lines). The NYISO performs real-time monitoring of the energy flows on the transmission elements (lines, breakers, etc.) to verify that they are not near pre-set limits such as those shown in DEIS Table 1. If the NYISO observes the energy flow on a transmission system element is at or approaching a limit, the NYISO may re-dispatch generators or take other actions to prevent energy flows and power levels from exceeding limits. This is a normal part of the operation of the transmission grid.

As discussed in Section 6.1.21, before a new generator is allowed to connect the transmission system, NYISO performs several studies to ensure that the connected project will be designed so that NYISO has the ability to manage flows and prevent overloads. These studies are performed as part of the FERC-approved interconnection process that must be completed before a project begins operating and adding electricity to the grid. Specifics on the interconnection process for the Stony Creek Wind Farm are discussed in FEIS Section 6.1.25. Deliverability of energy from the Stony Creek Wind Farm is addressed in FEIS Section 4.12.

6.1.23 Displacement of Other Renewable Resources (341)

Executive Summary, pg xxxv – the summary states that the [NYSEG Stolle Road-Meyer] transmission line "has adequate capacity to handle all existing and proposed wind farms". DPS advises that an appropriate analysis of available capacity and potential displacement of renewable electric generating should include consideration of hydro-electric power generation in addition to the wind powered generation connected to this transmission facility. (Submittal 341 – NYS Dept of Public Service)

Response: FEIS Appendix B.d discusses an energy deliverability study for the proposed project that includes an evaluation of available transmission capacity and the ability of local and regional renewable sources, including the 2,430 MW Robert Moses hydro-electric facility, to deliver energy under specific load cases.

6.1.24 Deliverability Study Requirement (341)

Deliverability Study: As per Commission Order 09-E-0497, Deliverability Study is required by the PSC to make decision on a petition submitted pursuant to Public Service Law §68. (Attachment: Information for the PSL §68 Petition, 18 pp.) (Submittal 341 – NYS Dept of Public Service)

Response: The comment largely recites the relevant regulatory scheme, and those points are acknowledged. Any deviations from the requirements are detailed in the DEIS/FEIS. A deliverability study for the proposed project is discussed in FEIS Appendix B.d.

6.1.25 NYSEG Correspondence (341)

Developer should provide details of communication/correspondence with NYSEG regarding the interconnection of the proposed facility. (Submittal 341 – NYS Dept of Public Service)

Response: Stony Creek has followed the standard process of the NYISO for requesting interconnection of the Project to the New York electric transmission system. NYSEG has participated in the interconnection process since its commencement in 2007. This process, which is not subject to oversight by any of the SEQRA coordinating reviewers but is summarized here nonetheless, has included:

- October 2007. Stony Creek submitted an interconnection request to the NYISO;
- November 2007. NYISO, Stony Creek, and NYSEG participate in a conference call that served as a "scoping meeting."
- January 2008. NYISO, Stony Creek, and NYSEG enter into a Feasibility Study Agreement.
- July 2008. NYISO provides Stony Creek with draft Feasibility Study Report.
- October 2008. NYISO, Stony Creek, and NYSEG enter into a System Reliability Impact Study (SRIS) Agreement.
- October 2009. NYISO provides Stony Creek with remaining base case data needed to complete the SRIS.
- February 2010. NYISO Operating Committee approves the Stony Creek SRIS
- April 2010. Stony Creek joins NYISO Class Year 2010 for evaluation of upgrades that may be necessary for the project to interconnect to the NYSEG system.

6.2 General Project Description

6.2.1 Phase 2 (335, 368)

The DEIS and meeting discussions refer to Phase 1 of the Stony Brook project (sic). The DEIS should look at the overall affects of the entire project, including future phases. All the items below should take into account the full project build out, not just Phase 1. (Submittal 335 – Anonymous)

Citizens of Orangeville, the map and permit only shows placement of the 59 turbines in phase one. What about phase 2? (Submittal 368 – Burgio, Michael (verbal))

Response: The Stony Creek Wind Farm is a one-phase stand-alone project as proposed. There is no phase 1 referenced in the DEIS nor is a phase 2 of the project planned or required for the Stony Creek Wind Farm to be a viable renewable energy project.

6.2.2 O&M Building and Substation Plans (341)

Sub Station and O&M Building Site Plan- Fig 8 and Section 1.2.8. Access and other details of the proposed substation site have not been demonstrated. Please provide switchyard and substation design drawings and site plans, indicating: property lines, setbacks and conformance to any local use requirements, access road location, permanent erosion control measures; …. (Submittal 341 – NYS Dept of Public Service)

Response: DEIS Figures 8 and 9 contain much of the information requested in the comment, including preliminary design drawings and site plans for the substation and O&M building, property lines. Figure 8 shows property lines - the yellow line is the parcel that will contain the aforementioned improvements, the blue line is the property line of parcel 83.-1-8. Figure 8 also shows ingress and egress from Centerline Road.

Final design of the substation and O&M building will conform to all applicable local land use requirements and building codes. The Project substation will be built in compliance with all applicable state and local laws regarding safety of such installations.

It is premature to complete final design drawings for the switchyard and project substations. Design of the switchyard is being considered as part of the NYSEG/NYISO facility study for the project that is underway in summer 2010. Additionally, such detail designs are outside of the scope of the SEQRA review of the Project; in satisfaction of SEQRA the DEIS has covered the foreseeable impacts. In the final design of the substation, Stony Creek will incorporate appropriate erosion and stormwater control measures, as dictated by the final SWPPP to be submitted to the NYSDEC, in accordance with the drainage discussions in the DEIS. Drainage from the substation site is also addressed in FEIS Section 6.2.4.

6.2.3 Substation Lighting (341)

…..indicate any station lighting needs, and appropriate design criteria; provide a statement indicating that any future lighting will be designed to avoid off-site lighting effects (i.e., avoid up-light direction except for as-necessary maintenance task-lighting; avoid drop-down optics to minimize light trespass). (Submittal 341 – NYS Dept of Public Service)

Response: Stony Creek will design lighting at the Project substation to minimize off-site lighting effects, to the extent practicable and in accordance with design codes for such facilities. Appropriate mitigation measures will include downward lighting and/or backlighting to avoid off-site lighting effects.

Lighting of the NYSEG switchyard will be in accordance with requirements established by NYSEG, the owner of the transmission line and eventual owner of the substation. Stony Creek will design and construct the NYSEG switchyard in a manner avoiding off-site lighting effects to the extent such designs are in compliance with NYSEG requirements and in compliance with applicable codes. This will include providing NYSEG with the ability to operate the switchyard lights by manual switches or by motion detectors, with no unnecessary permanent lighting.

6.2.4 Drainage from Substation and O&M Building Site (341)

In addition, the O&M facilities site plans should address site development, drainage and erosion control needs for this site in more detail than the preliminary sketch and typical layout as depicted in Figures 8 and 9. Development will likely involve cut and fill and grading of a greater portion of the site than is shown in Figure 8 to provide sufficient space for facilities installation; access and work space, and slope retention and permanent drainage and erosion control facilities, including sedimentation catchment areas. The site drains toward Stony Creek, with water quality criteria of Class A standards, which should be protected from permanent impacts by proper facility design and construction as well as adoption of appropriate operational controls. (Submittal 341 – NYS Dept of Public Service)

Response: For purposes of SEQRA review, where the requirements is evaluation of stormwater impacts, the Stormwater Pollution Protection Plan (DEIS Appendix B), demonstrates that stormwater impacts will be controlled to the maximum extent practicable. Stony Creek will build The substation and O&M building in a manner that minimizes soil erosion and stormwater impacts during construction and operation. As outlined in the Stomwater Pollution Protection Plan (DEIS Appendix B), Stony Creek will employ appropriate operational controls such as rock outlet protection, vegetative measures, diversion swales and other stormwater management features to control and treat stormwater leaving the site. The Site Plan will identify the physical details of stormwater management controls on the substation/O&M site, pursuant to Town of Orangeville Code section 306.

6.2.5 O&M Building Lighting (341)

Pg. 17 - Part 1.2.1 1 - Project lighting discussion indicates that the Operation and Maintenance (O&M) building will have exterior lights to illuminate the main signage and flags at the front of the building. The FEIS should include analysis of the reduction in impacts due to installation of downward directed lighting rather than uplighting for signs. (Submittal 341 – NYS Dept of Public Service)

Response: The O&M Building offsite lighting impacts are minimized by incorporating downward directional lighting and/or backlighting.

6.2.6 Lighting of U.S. Flag (341)

Illumination of flags is not recommended, since this usually involves up-ward directed lighting and is not necessary for marking the location of the O&M facility, advertising the business, or otherwise. Proper display of the national flag under ordinary situations includes lowering the flag at sundown, and raising the flag at sunrise. (Submittal 341 – NYS Dept of Public Service)

Response: Stony Creek is frankly proud to be an American company and intends to display the national flag outside of the O&M building at all times. In the past, Stony Creek's parent company, Invenergy LLC, has illuminated the American flag at night at other project locations as opposed to the alternative proposed in the comment. The suggestion to raise and lower the flag at sunrise and sundown, seven days a week, 365 days a year is a less cost-effective way to honor the flag that does not provide a substantial reduction in environmental impacts. In fact, some may prefer the environmental impact of having the flag lit and visible in the evening.

6.2.7 1.6 MW Wind Turbine (008, 014, 027, 041, 043, 085, 136, 156, 173, 198, 199, 328, 259, 229, 252)

A Table 9 (Report No. 409) by Acentech Incorporated has been submitted to the Town of Orangeville by Daniel Spitzer on February 12, 2010 in regards to residential sound levels (dBA) for a 59 GE 1.6 xle Turbine Layout. The tables (1.5 xle Turbine Layout / 1.6 xle Turbine Layout) when compared indicate significantly higher sound levels are indicated for the GE 1.6 xle Turbine Layout. The DEIS includes a GE Manual for the 1.5 mw wind turbine and all public presentations by Invenergy have only discussed the impacts of the 1.5 mw wind turbine here in Orangeville. There is nothing found in the DEIS regarding the 1.6 mw wind turbine or the GE 1.6 xle Turbine Layout other than the above mentioned table. Information found in the DEIS regarding the 1.6 mw wind turbine and the GE 1.6 xle Turbine Layout should be more extensive and specific if this is the turbine Invenergy plans to use for the project.

The DEIS is incomplete if it does not provide the same data for a 1.6 mw GE turbine as can be found for the 1.5 mw GE turbine. (Submittals 008 – Humphrey, Peter; 014 – Humphrey, Sally; 027 - Raab, Sherri; 041 – Langenfeld, Nick; 043 – Powers, Brian; 085 – Burgio, Helene; 136 – Dickinson, Darryl; 156 – Dickinson, Mary; 173 – Malicki, Richard; 198 – Makson, Paul; 199 – Makson, Paul; 328 – Kaczmarek, Brian; 259 – Moultrup, Steven; 229 – Nevinger, Mary; 252 – Nevinger, James)

Response: The DEIS clearly and explicitly considers the impacts of both the GE 1.5xle and the GE 1.6xle turbines throughout the document, and the FEIS addresses any differences in impact that might exist between the 1.5xle and 1.6xle and the 1.6-100 . As discussed in the DEIS Executive Summary (page xviii) stated that Stony Creek would most likely use the GE 1.5xle turbine, though it was also considering the GE 1.6xle turbine.

As discussed at length in DEIS Section 1.2.4, the two turbines are essentially identical. Both turbines are manufactured by General Electric and both have the same dimensions: a rotor diameter of 270.7 feet (82.5 meters), a hub height of 262.5 feet (80 meters), and a tip height of 397.9 feet; thus the visual impacts are the same. Dimensions for both turbines are shown in DEIS Figure 1, and the configuration of the typical spread footer foundation for both turbines is shown in DEIS Figure 2.

The FEIS considers the GE 1.6-100 model, which is the latest model of this type available from GE. As discussed in FEIS Section 3.1, it is similar to the other models, with the same hub height. The difference is the blades are approximately 29 feet longer, giving a tip height of 426.9 feet. The model is also quieter than the 1.6xle, and its use, the impacts of which are fully explained in the FEIS, will result in reduced impacts and greater benefits.

6.2.8 NYSEG Communications System (341)

Page 1 – the list of project components does not address or identify the proposed relay system that will be used for system communication on the NYSEG interconnection. The equipment should be described and characterizations of any impacts associated with new facilities should be provided. This should be addressed in the facilities study. (Submittal 341 – NYS Dept of Public Service)

Response: The design of the substation communications system will use existing facilities.

6.2.9 Flood Plain Map (291)

Please show the O&M building, substation, met tower, ECS and access roads on Map 11. (Submittal 291 – Stantec)

Response: A revised map with the requested features is provided in FEIS Appendix A.2.f.

6.2.10 Steep Slopes Map (291)

Please show the O&M building, substation, met tower, EC and access roads on Map 12. (Submittal 291 – Stantec)

Response: A revised map with the requested features is provided in FEIS Appendix A.2.g.

6.2.11 Editorial: ECS Description (291)

Relative position of ECS cables and fiber optics as described in text doesn't match Figure 4. (Submittal 291 – Stantec)

Response: The fiber optic cable will be installed just above, or beside, the ECS cables. DEIS Figure 4 shows one of these configurations – where the fiber optic cable is installed beside the ECS cables.

6.3 Alternatives

6.3.1 More Analysis (013, 035, 052, 093, 120, 158, 169, 184, 241, 253, 271, 301, 310, 316, 318, 331, 345)

It is my understanding that it is the responsibility of the applicant (Invenergy) to provide a complete and extensive listing of alternatives to the town. If this project is all about renewable energy production and the environment, as they claim, why is only the production side (their profits) presented in the DEIS? Why is an extensive listing of alternatives not presented, as is required? The DEIS cannot be deemed complete until a complete, thorough listing of alternatives is done, and thoroughly reviewed and examined by the Town as they will probably be able to find a much more suitable option for our area. (Submittals 013 – Humphrey, Sally; 035 – Guerra, Mike; 052 – Hopkins, Harold; 093 – Burgio, Michael; 120 – Orlowski, Joseph; 158 – Dickinson, Mary; 169 – Malicki, Alice; 184 – Librock, John; 301 – Ramsey, Donna; 310 – Davis, Barbara; 316 – Wilkinson, Nyla; 318 – Wilkinson, Ted; 271 – Accardi, David; 241 – Nevinger, Mary; 253 – Nevinger, James)

Alternatives: It is my understanding that it is the responsibility of the applicant (Invenergy) to provide a complete and extensive listing of Alternatives to the Town. If Invenergy's true concern is for renewable energy and the environment as they claim, why is only the production side (their profits), presented in the DEIS? I expect that an extensive listing of Alternatives will be presented, as is required, to the Town Board and all Orangeville citizens before any approval can be considered. (Submittal 331 – Barton, Mary Kay)

I am a lifetime Republican. I'm a prolife conservative republican with growing libertarian leanings. I'm a Tea Partier. I'm for private property rights. But I'd like to talk about alternatives. It is my understanding that it's the responsibility of the applicant, Invenergy, to provide a complete and extensive listing of alternatives to the Town. If this project is all about renewable energy production and the environment, why is the only the production side, their profits, presented in the DEIS. Why isn't an extensive listing of alternatives not presented as required. The DEIS cannot be complete until a thorough listing of alternatives is done in a thoroughly reviewed and examined study. (Submittal 345 – Hopkins, Harold (verbal))

Response: The DEIS included a full discussion of Alternatives, including the No Action Alternative, as required by New York State Environmental Quality Review Act (ECL § 8-0109), and in accordance with the specific directions of the adopted Final Scope. That discussion was expanded in the FEIS to reflect the latest version of the GE turbine (Model 1.6-100) and the minor differences in impacts that would result using the 1.6-100. That model is now the preferred alternative because of the reduced impacts over the models reviewed in the DEIS, although the models and the impacts are very similar. The focus is on the Project because this is a review of the Project, not a general investigation into renewable energy. SEQRA requires Environmental Impact Statements to provide: "a description and evaluation of the range of reasonable alternatives to the action that are feasible, considering the objectives and capabilities of the project sponsor." (6 NYCRR §617.9(b)(5)(v)). The act does not require the range of alternatives to be "extensive," nor "complete," as a nearly infinite number of alternatives are conceivable. The range of alternatives presented in the DEIS is in compliance with the Act and the Final Scope.

6.3.2 Additional Alternatives (046, 092, 105, 131, 147, 167, 181, 206, 239, 261, 327, 345)

I want to know when the alternative plans for the following scenarios will be completed and available for public review? (i) A plan for the smaller windtamer turbines (ii) A plan with fewer Invenergy turbines (iii) A plan for other alternative energy sources such as a plan using geothermal energy. (Submittal 131 – Jensen, Kathleen)

I have had the fortunate meeting with Gerald Brock, the president of Wind Tamers. Wind Tamers would have been a nice alternative. The Wind Tamers could have provided up to one thousand jobs in Wyoming County for manufacturing. There's a market for them. They basically go up to 35 feet rather than upwards of 400. You could have used your hedgerows to place them taking no agricultural land out of use. You could have not offended certain neighbors and reduced this whole thing, but I understand that the company has been involved with this for years before we even started looking at it in an official legal way. (Submittal 345 – Hopkins, Harold (verbal))

Under SEQRA, an EIS must contain a discussion of alternatives. The SEQRA regulations require the discussion to include a description and evaluation of the range of reasonable alternatives to the action. Section 4 of the Invenergy DEIS demonstrates a lack of sincere collaboration and imagination on the part of the wind developer especially considering the fact that Invenergy's primary business is producing energy using resources other than wind / renewables. Solar energy and geo-thermal energy when combined with wind technology can generate consistent megawatts and diminish the impact of a wind project of 59 wind turbines over 400 feet tall. The Environmental Impact Statement should include collaborative efforts to mitigate negative impacts with regards to residences within the footprint of a wind farm. Please include updated information on solar and geo-thermal technology and how collaborative alternative energy technologies have been successful in other areas of the USA. (Submittals 046 – Nevinger, James; 092 – Burgio, Michael; 105 – Dylag, M.; 147 – Dickinson, Darryl; 167 – Malicki, Alice; 181 – Librock, John; 206 – Makson, Paul; 327 – Kaczmarek, Brian; 261 – Moultrup, Steven; 239 – Nevinger, Mary)

Response: Alternative 5, described in the DEIS on pages 188 and 189, proposes use of WindTamer turbines. The DEIS concluded this alternative was not viable/practical, primarily because the Wind Tamer turbines are not generators on the same scale, as the largest unit only has a maximum generating capability of 0.0048 MW, and a similar project would need to have 19,667 WindTamer machines.

Alternative 3 (DEIS page 185-187) proposed use of fewer turbines as suggested by the commenter. Although Alternative 3 results in less area of ground disturbance than the preferred alternative, and fewer acres of forest removed than the preferred alternative, it will produce significantly less revenue for landowners and local jurisdictions with very similar visual impacts. This alternative does not make efficient use of all of the renewable wind energy resource in the Project Area and it results in more habitat impacts per megawatt of installed generation.

Alternative 6 (DEIS page 189) proposed use of another alternative energy source, solar panels. Alternative 6 did not become the preferred alternative because relative to Alternative 1, it would require almost 18 times more land, either forested areas that would be cleared, or agricultural land that would be removed from production. Geothermal energy is not a feasible

alternative for this analysis, since the required thermal gradient does not exist in the project area, i.e. there are no hot springs of the type used to economically generate electricity such as those, e.g., in Iceland.

6.3.3 Town-Owned Wind Project (334)

The Alternatives section might have laid out the case (for or against) the Town of Orangeville acting on its own to form its own municipal utility. In this scenario, the Town would have a lot more control over size, placement, number of turbines, and ability to retain a much larger share of the profits. It would also provide the Town with the ability to share the wealth through reduced electric rates such that everyone in the township could see some benefit. It would also allow the same or greater revenue to be generated from far fewer turbines. Nearby Silver Springs, NY provides a good example of a functional municipal utility. Yet, the DEIS is totally silent on this option. But the applicant may be qualified to address the potential benefits and risks of this alternative. The Town will be better informed about the options it faces when this alternative is explored fully. The Alternatives Section of the DEIS is also inadequate because it fails to discuss measures to reduce the demand for electricity in the first place. The whole point of providing an "alternatives" section in the structure of a DEIS is to allow for discussion of viable alternatives to the proposed project. The DEIS succeeds only to a limited degree in that it discusses more or fewer turbines, and briefly, smaller turbines - all of them massed in grid-connect mode for power export out of the area.

Consequently, the DEIS fails to provide a vitally important forum for comprehensive thinking because it focuses only on Grid-Connected supply-side options. To inform the Town Board and citizens more completely, the DEIS should address viable alternatives on the Demand Side, and options that would allow for local benefit of the electricity generated. (Submittal 334 – Bassett, David)

Response: The EIS reviews the proposed project's alternatives to judge potential ways to mitigate environmental impacts. SEQRA does not require alternative evaluation of ownership structures, nor does New York law permit the Town to favor public ownership over private in land use decisions.[55]For the Town to take on its own wind project, it would have to spend considerable resources and take on substantial risk, both of which are outside the mission of local municipal government.

Further, SEQRA requires Environmental Impact Statements to provide: "a description and evaluation of the range of reasonable alternatives to the action that are feasible, considering the objectives and capabilities of the project sponsor." (6 NYCRR §617.9(b)(5)(v)). In this case, the Project sponsor is Stony Creek Energy, not the Town of Orangeville.

6.3.4 Energy Conservation (334)

The "alternatives" section of the DEIS should be expanded greatly to focus on energy efficiency to inform the Town Board of many options before it. Treatment of alternatives should be complete, comprehensive and present a landscape of options. It is essential that alternatives be brought

[55] *Countryman v. Schmitt,* 176 Misc.2d, 736, 673 N.Y.S.2d 571 (Sup Ct. 1998).

before the public for open discussion now, because failed policies are hard to admit and harder still to correct.

Adding new electrical generation capacity is crudely analogous to adding new roadway capacity. Once installed, it does not go away. And fundamental problems remain unresolved. Efforts focusing only on production will fail unless demand is curbed.

Before we throw away our Western New York vistas, and before we count dead birds on migration routes to Canada, let us pause to get perspective and to think more creatively about alternatives and future consequences of today's proposals.

The DEIS should address the generation efficiency of the current national fleet of electric power plants. At national average, these power plants deliver electricity to customers with an efficiency that captures only 29% of the energy content in primary fuel – the other 71 % is lost as un-recovered ''waste'' heat. To propose building new electrical generating capacity in the face of existing and overwhelming inefficiency of generation is foolhardy and unwarranted. It seems only prudent to clean up our existing inefficient house before building new. The DEIS should address, contrast and compare technologies to improve energy efficiency through co-generation, combined heat and power, district energy systems, distributed and on-site energy systems. These and other proven technologies can reduce the need for new generating capacity by using energy more efficiently. The Convention Center at McCormick Place in Chicago operated by Trigen, Inc. converts the primary energy in fuel to useful human outcomes at an overall thermal efficiency of more than 90% -- three times the national average. We can improve in Western New York as well.

Rather than risk significant degradation and environmental consequences of massive construction proposals, the Town of Orangeville could focus on more efficient uses of energy, achieve more desirable results and improve the financial condition of the broader community of residents while doing so.

Our energy future requires a balanced approach. Prudent public policy means striking a balance between energy production and use. Let's think creatively about what kind of energy future our grandchildren might desire. (Submittal 334 – Bassett, David)

Response: As discussed in Section 6.3.1, the DEIS presents a range of reasonable and feasible alternatives, that are appropriately comprehensive and in compliance with SEQRA.

We agree that the DEIS alternatives focus on various methods to generate electric power, but disagree that alternatives assessing energy conservation are necessary. The Final Scope does not require such review nor is it appropriate in an evaluation of a generating facility. Energy efficiency is achieved at the residential and commercial level by changes in lifestyle and investments in upgraded capital equipment. Prudent public policy is achieved with minimum degradation of the environment by construction of the proposed wind farm.

The substantial financial benefits to be realized in the Town and County address the commenter's request for "local benefits."

6.3.5 Smaller Turbines (334, 378)

I'd like to see studies done or studies showing the feasibility of smaller projects, smaller turbines, ones that are less intrusive to the people of the town. I know other towns, you get in the cities one of the things the zoning is heights of buildings. You are not allowed to have a building say over 30 feet high within so many feet of a property line. With these towers being 400 feet plus, I'm guessing another hundred feet or better for the blades up in the air. It's not a structure you'd see in the city or any town near Buffalo, Rochester or anywhere else and that's why you don't see those turbines more in the cities. I'd like to see – I guess my point is I'd like to see other studies done of the feasibility of using smaller turbines than are out there. (Submittal 378 – Daniel, Eric (verbal))

Alternative 4 devalues to zero the aesthetic arguments of those citizens who would feel more comfortable with smaller turbines. From page xxxiv: Because this alternative does not make efficient use of all of the renewable energy resources and will result in 75% less renewable energy and associated benefits, it has no benefits over the Preferred Alternative. No benefit?? This is an inadequate finding and may be taken as an insult by those who would prefer less invasive turbines. (Submittal 334 – Bassett, David)

Response: The comment in submittal 378 is incorrect in stating that the blades would extend 100 feet or more than 400 feet. The height of the turbines is accurately described in the DEIS.

Submittal 378 requests analysis of an alternative featuring smaller turbines, or fewer turbines. These scenarios were discussed as DEIS alternatives 3 and 4 (DEIS sections 4.4 and 4.5).

In DEIS Section 4.4, it is acknowledged that the smaller turbines would result in slightly reduced visual impacts. The DEIS executive summary statement would be more accurate if it were written as:

> Because this alternative does not make efficient use of all of the renewable wind energy resource, and will yield 75% less renewable energy and associated benefits, its very slightly reduced visual impact does not make it preferable to the Preferred Alternative.

6.3.6 Larger Turbines (278)

Section 4 Alternatives – This section describes the various alternatives explored by the project sponsor. In total, seven alternatives were reviewed but only one alternative (Alternative 3) involved fewer turbines and that was developed to reduce potential forest impacts. Alternative 3 would involve constructing 31 turbines as opposed to 59 turbines in the preferred alternative. However, this alternative is dismissed because of reduced economic benefits. We note that the analysis does not indicate that the project would not be viable if Alternative 3 is selected. We suggest that the project sponsor review a project design with 2 MW wind turbines siting in non-forested areas. (Submittal 278 – US Dept of the Interior)

Response: The DEIS evaluated the use of fewer turbines in accordance with the Final Scope. This alternative, discussed in DEIS Section 4.4, was a 31-turbine project of 1.6 MW turbines (49.6 MW in total) that was designed to have no turbines in wooded areas. The DEIS found that this alternative would reduce forest impacts, but it would also result in more impacted acres per MW (4.5 acres/MW instead of 4.1 acres/MW in the proposed project) and it

would not be able to pay the same level of economic benefits to the local community ($389,000 per year instead of $740,480 per year with the proposed project). This alternative would be less economically competitive than the proposed project.

The alternative suggested in submittal 278 is the fewer turbines alternative evaluated in the DEIS but designed with 2.0 MW turbines instead of the 1.6 MW turbines. Stony Creek evaluated a 1.6 MW alternative because it believes use of this turbine or the 1.5 MW turbine will result in the most reliable and commercially viable project. Use of other turbines such as ones with a 2.0 MW capacity introduce a range of considerations that affect the viability of the project. Nonetheless, this alternative is evaluated herein.

Larger capacity turbines would have larger rotor diameters, and they would need greater separation than the 1.5 and 1.6 MW turbines evaluated in the DEIS. This, combined with the restriction of not placing turbines in wooded areas, would result in a project of less than 31 turbines. Stony Creek estimates that such a layout would have six fewer turbines, resulting in a project of 25 turbines at 2.0 MW each, for a total generating capacity of 50 MW – essentially the same as the alternative evaluated in the DEIS.

Impacts of the fewer turbine / 2.0 MW turbine alternative would be similar to that of the fewer turbine alternative. Total impacts would be similar to that for the 31 turbine, fewer turbine alternative, because length of roadway would be largely the same, even though there would be fewer turbines. Impacts to visual resources would likely be the same, since six fewer towers would not substantially increase or decrease the visibility of the project. Impacts from construction staging areas, and the substation would not change. Compared to the emissions offset estimates for the preferred alternative in Table 31, the fewer turbine/ 2.0 MW turbine alternative would displace 38,000 fewer tons of CO2 per year, 70 fewer tons of NOX per year, and 100 fewer tons of SO2 per year. Such an alternative would also provide about 50% fewer of the renewable energy credits needed for the state to meet its RPS targets. In the terms of a comparison of MW of installed capacity vs. permanent impact to land, this alternative will increase the actual acreage of disturbed land per MW produced.

In summary, the net decrease of installed MW capacity vs. the acreage of permanently disturbed land per MW produced and the decrease in PILOT revenues does not justify this as a viable alternative. This reduction obtains only incremental and very local reductions in impacts at the cost of losing significant local economic benefits and potentially significant regional environmental and NY policy benefits.

6.3.7 Inconsistency in DEIS Alternative 3 (334)

Insufficient articulation of viable alternatives to the proposed action: Alternative 3 seems to have an internal inconsistency. It purports to use 31 turbines instead of 59, yet increases the burden to habitat.

From pages xxxiii and xxxiv: This alternative does not make efficient use of all of the renewable energy resource in the Project Area and it results in more habitat impacts for every megawatt of installed generation. If this is true, it poses a serious question of how there can be more habitat impact for every megawatt of installed generation. This should be explained more fully to the Town Board and the citizens. If it is not true, this phrase should be deleted. (Submittal 334 – Bassett, David)

Response: The DEIS text is correct and consistent. The statement referred to by the commenter concerns the acres of impact per MW of installed capacity. This is correctly stated in the DEIS executive summary. In DEIS Section 4.4, a table is provided that compares the acres per MW for the preferred alternative and for Alternative 3. The reason for the difference is due to the need for a fixed amount of area to be occupied for the project substation, regardless of the number of turbines installed.

6.4 Project Construction

6.4.1 Topsoil Stripping for ECS Installation (338)

Section 1.2.7 discusses the installation of underground electrical collection lines and Right-of-Way (ROW) widths. A ROW width of 20-feet is simply not enough width for areas where multiple circuits will be installed in parallel. Based on the Department's observations of construction activities on similar projects across the state, greater ROW widths will be required. Specifically, additional work space (ROW widths) will be necessary for the required separation distances between circuits as well as for adequate separation of topsoil from subsoil or "ditch-spoil". Topsoil stripping and stockpiling will be required for the installation of 2 or more parallel circuits.

The Project Applicant should plan on stripping topsoil in agricultural segments of the ECS route regardless of soil conditions and regardless of whether a trenching machine is used or if the trenches are to be "open cut" using an excavator or "trackhoe". Linear topsoil stockpiles shall be appropriately coordinated with the placement/installation of underground collector cables (including other potential under-ground utilities) installed adjacent to access roads. Wider ROW widths will eliminate the need to handle stockpiled topsoil more than once; thus reducing the potential for additional soil resource impacts including topsoil/subsoil mixing and soil compaction. (Submittal 338 – NYS Dept of Ag and Markets)

Response: ECS impact widths are discussed in DEIS Section 1.4.7, but not in DEIS Section 1.2.7. We concur with the comment in that, as discussed in DEIS Section 1.4.7, in some locations up to 50 feet of width may be required for open trench installation of ECS cables.

As discussed in FEIS Section 6.10, in constructing the Project, Stony Creek will comply with the Orangeville Town Law and the current version of NYSDAM Guidelines. At the time of this FEIS, neither of these documents requires stripping of topsoil when a trenching machine is used. This approach is reasonable since use of a trenching machine results in very little disturbance (14" wide cut is typical) to the topsoil, and arguably more disturbance and impacts will occur by stripping a 50-ft wide swath of topsoil for this relatively narrow cut.

In accordance with Town Law and the guidelines from NYSDAM, if Stony Creek uses open trench methods to install ECS cables in active agricultural fields, Stony Creek will strip topsoil from the expected impact areas prior to digging of the trench. In areas where Stony Creek plans to use a trenching machine to install ECS cables in an active agricultural field, Stony Creek will strip topsoil from the expected impact areas if NYSDAM and the landowner agree that it is preferable to strip topsoil from expected impact areas.

Regardless of the method used, at the completion of ECS installation in active agricultural fields, Stony Creek will restore affected areas in accordance with the requirements of the Town Law and the guidelines of the NYSDAM.

6.4.2 ECS Cable Burial Depth (338)

ECS cables should be buried a minimum of 4-feet in active agricultural fields and pastures. (Submittal 338 – NYS Dept of Ag and Markets)

Response: In compliance with Town Law and the current NYSDAM Guidelines, if any ECS cables are installed in active agricultural fields, Stony Creek will install such cables with a

minimum of 4 feet of cover, except that if cables are installed in areas where bedrock exists within 4 feet of the surface, the ECS cables shall be installed entirely below the top of the bedrock and not less than 24 inches deep.

6.4.3 Clarification: ECS Trench Width (278)

A description on Page 15 of the underground electrical collection system does not provide a width of trenches needed to install cables. This should be added in this section. (Submittal 278 – US Dept of the Interior, Fish and Wildlife Service)

Response: The commenter refers to the text in DEIS Section 1.27 that describes the project configuration. DEIS Section 1.4.7 discusses the width of the trench and the area impacted for different methods of cable installation.

6.4.4 Water Sources (382)

Water Withdrawals for Construction (Section 1.4). The source of water for construction such as batch plants (if any – the DEIS states that the applicant does not anticipate use of an on-site batch plant) and other high use water requirements such as dust control should be clarified in the Final Environmental Impact Statement. Pumping requirements from each source should be detailed along with any potential impacts to aquatic resources. The length of time and quantity of water withdrawals should be specified. If the source of water for construction requirements is groundwater, impacts on nearby wells should be assessed. (Submittal 382 – NYSDEC)

Response: Sources of water for construction are discussed in DEIS Section 3.4.3 (page 73). As described in the DEIS, Stony Creek anticipates drawing from one of the many surface water sources, likely a farm pond, and not from a well, and will commit to draw water for dust control only from surface water sources. Drawing of water from ponds would be arranged with the owner of the pond and would be done in accordance with NYSDEC regulations. In the unlikely event that Stony Creek must draw water from a well, quantities would be limited to approximately 250 gallons per day. Such levels of water withdrawal will not impact other wells, as it is similar to what would be used by a typical New York family residence.[56]

Table 32 lists typical water consumption requirements during Project construction.

Table 32. Project Water Requirements during Project Construction

Use	Water Use	Notes
Dust suppression	34,000 gal/day	This is a maximum use rate that assumes 2 truck will be used with each filled 5 times per day, with a one-trip truck capacity of 3,400 gallons. This level of activity could be required during the first approximately 4 months of construction, but rates will be less if weather conditions do not require daily dust suppression. .
Construction laydown yard	250 gal/day	Toilets, bathrooms, drinking water at construction trailers. Usage will vary depending on number of workers on site. This is a maximum rate that would apply about 6 days/week during highest staffing levels, totaling

[56] Average domestic water use by New Yorkers using self-supplied sources is 75 gallons per day. Thus, a four person family can be estimated to use 300 gallons/day. Source: USGS Circular 1344, "Estimated Use of Water in the United States in 2005," Table 6. Available at http://pubs.usgs.gov/circ/1344/pdf/c1344.pdf.

		1,500 gallons/week. Average usage at the High Sheldon Wind Farm was estimated to be 1,500 gallons per week.
Batch Plant	None required.	A batch plant is not anticipated.

A likely surface source for water would be the approximately 5-acre pond located on the Tozier property near the proposed construction area. If all of the water in Table 32 were drawn from this pond, it would reduce the volume of water in this pond by approximately 1/4 of an inch every day.

6.4.5 Turbine Availability (341)

Developer should provide a status report on equipment availability and expected delivery dates for towers, turbines, transformers and related major equipment. (Submittal 341 – NYS Dept of Public Service)

Response: Invenergy, the sole member of Stony Creek LLC, has contracts with GE Wind for delivery of wind turbines to locations to be specified by Invenergy. Invenergy also has blanket contracts in place for delivery of transformers required for construction of wind energy projects. In the event that Stony Creek is granted permits and power sales contracts necessary to make the project economically viable, Invenergy would direct wind turbines and transformers due under its existing contracts to the Stony Creek site to support construction commencing as early as Fall 2011.

6.4.6 Silt Fences (291)

The text states [DEIS Section 1.4.4] that silt fences will be placed "at the limit of disturbance to control erosion" at WTG sites. The SWPPP only calls for silt fences on the downslope side of the work area. Which is the intent? (Submittal 291 – Stantec)

Appendix B SWPPP: 2. Section 5.2.2 calls for silt fence only on the downslope side of sites with a slope of 5% or more, which contradicts statement in DEIS 1.4.4 that silt fence will surround the work area. (Submittal 291 – Stantec)

Response: The DEIS SWPPP is correct. Stony Creek plans to place silt fence at the downslope limit of disturbance on slopes greater than 5%, but not at upslope or areas that are essentially level.

6.4.7 Slag (291, 339)

Notes are missing from Figure 6. Also, please elaborate on the aggregates to be used for the access roads. Is slag proposed as a component? (Submittal 291 – Stantec)

Will Invenergy be using slag of any kind in the Orangeville Stony Creek wind farm project. If so, will you disclose the exact location of the slag prior to the start of the project? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: Stony Creek will not use slag or non-natural aggregate in the construction of access roads, crane pads, or WTG aprons. A revised version of DEIS Figure 6 is provided as FEIS Appendix A.2.l.

6.4.8 Foundation Dewatering (291, 341)

If dewatering of foundations occurs on agricultural land, what measures will be taken to prevent excessive accumulation of the pumped water in active fields? (Submittal 291 – Stantec)

Will silt bags be required on dewatering hoses in all cases? If not, and given that the bags help spread the flow from the hose (in addition to trapping sediment from the excavation), how will soil erosion due to the flow from the hose be prevented? (Submittal 291 – Stantec)

Section 3.4.3 – please describe the proposed methods for handling and disposal of wastewater from dewatering operations. (Submittal 341 – NYS Dept of Public Service)

Response: Dewatering of foundation pits, if necessary in agricultural fields or elsewhere, will be carefully monitored to prevent excessive accumulation of the pumped water, to ensure it doesn't result in significant flows into wetlands, and to ensure it doesn't cause significant soil erosion. If a dewatering operation is found to result in erosion, Stony Creek will take appropriate steps, such as use of sediment bags, to minimize soil erosion. Other management techniques could include limiting pumping in cases where pumped water would pool on saturated soils.

6.4.9 ECS in Steep Slopes (341)

Section 3.2.3 - For construction in steep slope areas, please describe how slopes will be stabilized after the areas have been backfilled and restored to their pre-construction topography. Trench breakers may be appropriate for installation of ECS on steep slopes to minimize erosion and subsidence along the buried cables. (Submittal 341 – NYS Dept of Public Service)

Response: An updated map provided in FEIS Appendix A.2.g shows locations of ECS relative to steep slopes. As shown on this map, there are very few, if any, locations where ECS routes pass through an area where the slope exceeds 15%.

If ECS cables are installed in areas where the local slope is 15% or more, after backfilling and restoring the area, Stony Creek will seed the area to encourage vegetation that will stabilize the backfill and minimize erosion. If necessary, Stony Creek will also install water bars to prevent erosion until vegetation is established. Use of trench breakers will not be necessary because the cable trenches are backfilled immediately after cable installation.

6.4.10 ECS Pipeline Crossings (341)

Gas Pipeline Crossing - Part 1.4.7. Gas Pipeline Crossing should be coordinated with the Gas Pipeline owners. (Submittal 341 – NYS Dept of Public Service)

Response: Comment noted. As stated in DEIS Section 1.4.7, Stony Creek will coordinate with the pipeline owner on the design and installation of ECS crossings of gas pipelines.

6.4.11 ECS Depth with Trenching Machine (341)

The DEIS states that excavations for Electric Collection System (ECS) installation using an open trench method will require a minimum depth of 36-48 inches. Please state the minimum depth for these excavated areas if a trenching machine is used, as well. (Submittal 341 – NYS Dept of Public Service)

Response: Where a trenching machine is used for ECS cable installation, Stony Creek will place cables at a depth of 36 to 48 inches, in accordance with guidelines from the NYSDAM.

6.4.12 Disposal of Excess Soil (341)

Section 1.4.14 – Please explain how excess soil that is not used for construction backfill will be handled and disposed. (Submittal 341 – NYS Dept of Public Service)

Response: Generally, excess soil is used on-site for re-grading around turbine bases and under roads. For instance, foundation excavation soil is generally used to backfill around the foundation and to rebuild the areas of the turbine worksite that are stripped of topsoil, with the final grading having a slight slope away from the turbine tower. If cut and fill is required for road construction, and very little of this is expected at the Stony Creek site, excavated subsoil is used to grade the road base and excavated topsoil is used to blend the road into existing contours. Stony Creek does not anticipate having to dispose of any subsoil from outside of the immediate property on which it was removed.

6.4.13 Solid Waste Will be Generated (280)

EAF Item No. 17 (Page 7 of 21). The project will "involve the disposal of solid waste." However, the question is answered with a check mark in the "No" box. The proposed construction phase as well as operation of 59 wind turbines, an electrical collection system and substation, access roads, Operations and Maintenance facility, a meteorological tower and possibly a concrete plant will certainly include generation of solid waste, No estimated rates of disposal or anticipated site life are provided. Does the applicant/sponsor believe no solid waste will be generated as part of the construction or operation of the project components? Why was the generation of solid waste omitted from the EAF? (Submittal 280 – Core Environmental)

Response: Small quantities of solid waste will be generated during Project construction and operation, and DEIS Section 1.4.21 addresses solid waste during Construction. It states that waste will be collected and stored in dumpsters at the construction staging area. Waste at the construction staging area will be periodically collected by a private waste disposal contractor. Sanitary waste will be managed using portable facilities at the construction laydown yard.

During operation, solid waste will be small volumes associated with general housekeeping and operation of a small office. Most likely Stony Creek will contract with a commercial waste removal company for periodic removal of solid waste generated at the O&M building.

If solid waste was not identified in the EAF, it was a minor oversight since the amounts of solid waste generated by Project operation and construction are very small. Moreover, given that the purpose of the EAF is to identify potential significant impacts, omission of this item is not inconsistent with the regulatory intent. In any case, the DEIS and FEIS supersede the EAF, and are therefore the relevant documents for this stage of the SEQRA review process.

6.4.14 Approval of Substation Construction (291)

Who has final approval over the substation construction? (Submittal 291 – Stantec)

Response: The substation will be designed in accordance with applicable Town code requirements and design requirements established by the ultimate owner of the substation, NYSEG. NYSEG will approve the design drawings and will provide engineers who will review the

project construction prior to its commissioning. The Substation design will be submitted by a licensed engineer to the Town and County as part of the building permit process.

6.4.15 Fuel Tanks (291)

Under "Fuel and Chemical Storage" – will "job tanks" for fuel be located at the construction staging area? If so, what spill prevention measures will apply to them? (Submittal 291 – Stantec)

Response: Fuel tanks will be staged at the construction laydown yard. These tanks will be double-walled for spill prevention and containment. Spill kits will be available at the construction laydown yard. If the Stony Creek construction laydown area has one or more aboveground storage tanks with a combined oil storage capacity of 1,320 gallons or more, then Stony Creek will comply with the applicable regulations regarding spill prevention, control and countermeasures (SPCC) plans at such sites.

6.5 Project Operation and Maintenance

6.5.1 Complaint Response Time and Non-Residents (064, 366)

I would like to address the "complaint resolution procedure" that Stony Creek Energy LLC has proposed.

They propose to "make reasonable efforts to respond to all complaints from town residents and businesses within 1 week (7 days) of Stony Creek's receipt of a complaint". Does that mean a nonresident traveling thru the area has no right to inform Stony creek of a problem? If someone did, would they be ignored?

A one week (7 day) time luxury shows a lack of respect for the community. It sends a message that any complaint will not be taken seriously. If my horses or calves were to get loose, run around the neighborhood, destroying mailboxes and damaging lawns, I certainly would not be given the luxury of a 1 week time period to respond to that complaint! I would be requested to respond and repair immediately.

If the local feed mill were to deliver a quantity of substandard product, whether it be grain or fertilizer, the recipient would demand an immediate response to their complaint. They certainly would not tolerate a one week time frame.

When an erratic driver or a traffic situation occurs on the NY State thruway, Buffalo dispatch responds immediately. They certainly would not let the situation fester. The health, safety and welfare of all using the Thruway is paramount, not for just a select few.

I request that all complaints be addressed within 24 hours by a qualified person via a toll free number. An unmanned answering machine will not be an acceptable means of relaying complaints "implemented at the start of construction and to continue to be followed until the project is no longer in operation." (Submittal 064 – Dickinson, Mary; 366 – Dickinson, Mary (verbal))

Response: An updated Complaint Resolution Procedure is provided in FEIS Appendix A.3.f. The updated procedure requires Stony Creek respond within one (1) business day of receipt of a complaint, clarifies that it applies to all people (not just Town residents and businesses), and requires that the phone number be either toll-free or local to Orangeville. Note that the complaint line is not intended to serve as an emergency number. For emergencies, people would still call 911, and Stony Creek personnel would respond as described in the Emergency Response Plan.

6.5.2 Complaint Resolution Time and Escrow (71, 373)

I would like to offer the following comments to the Town Board of Orangeville, NY regarding the complaint resolution procedure for the proposed Stony Creek Wind Farm. I offer these comments in hopes that they will be heard and addressed, my experience regarding Public hearings in the Town has been less than positive without as much as a reply from the Town Board. Hopefully this time it will be different.

Stony creek advises that complaints not resolved at the "project level within 45 days" may be referred to an officer of Stony Creek LLC and if the complaint is not resolved within 90 days, then a "mutually acceptable mediator at a mutually acceptable time and location in accordance with a mutually acceptable mediation procedure is next. So, after 135 days (4½ months) of an unresolved issue, a complainer would be obligated to deposit $500 in escrow to cover their share of the estimated costs of mediation. WHY?

Stony creek caused the situation in question. Stony creek should, in good faith, accept all costs associated with resolving said complaint, whether it be from "noise, shadow flicker, dust, well interruption, interruption with television broadcast and any other impacts not specifically identified herein". What about houses where the foundation has cracked because of blasting done to install a turbine pad? How long would that family have to wait for acknowledgement?

This proposal shows another lack of respect for the community. It specifically discourages anyone from complaining as the procedure is too long and drawn out. (Submittal 071 – Dickinson, Darryl; 373 – Dickinson, Darryl (verbal))

Response: The time periods in the DEIS complaint resolution procedure allow appropriate time for both parties to work out the best available solution to the complaint. Time may be required for the particular conditions to repeat themselves, for the wind company to develop solutions, for people to respond to proposals, etc. Decreasing the times will not necessarily result in better solutions and thus no changes are made to resolution time tables in the updated Complaint Resolution Procedure in FEIS Appendix A.3.f.

If mediation is required, joint funding of an escrow account is proposed as a measure to ensure mediation expense and effort is not expended on frivolous claims. It should not be a deterrent to individuals wishing to file legitimate claims. The comment mischaracterizes the proposed process. The proposed Complaint Resolution Procedure does not require anyone to pay to lodge a complaint, it only addresses mediation costs. The updated Complaint Resolution Procedure in FEIS AppendixA.3.f specifies that Stony Creek will reimburse the complainant for the cost of mediation if the mediator finds the complaint to be legitimate and valid.

The comment suggests the Project will result in cracked home foundations from blasting. As discussed in FEIS Section 6.29 and DEIS Section 3.15, blasting is not expected to be required for Project construction, and if it were required it would be limited and controlled. Cracked home foundations are not anticipated to occur, but DEIS Section 3.15.1 also discusses mitigation, including repairs, in the unlikely event that such damage occurs.

6.5.3 Complaint Resolution General (297)

As I see it, turbine company vision is: Make profits from current green energy group – think generated tax subsidies to place obsolete generation wind turbines in poor rural communities with residents of limited financial resources. Eliminate potential losses by incorporating complaint resolution requirements into contracts to include:

- *Minimum $500.00 fee to place complaint against the turbines*
- *Agreement between turbine company and complainant on place of arbitration*

- *Town Board of Orangeville, whose members have conflicts of interest with turbine company, has first choice to be arbitrator.*

- *Complaint timeline allows minimum 4 months for first response, but could take year for action on complaint. (Submittal 297 – Ramsey, Donna)*

Response: Comment noted. Complaint response time and resolution time as well as cost of arbitration are discussed in FEIS Sections 6.5.1 and 6.5.2. Agreeing on a mutually acceptable location for arbitration is a reasonable condition that is required by the Complaint Resolution Plan. The commenter's assertion that Orangeville Town Board members have conflicts of interest is addressed in FEIS Section 6.9.1.

6.5.4 Bias in the Complaint Resolution Procedure (337)

Project will accept dealing with a company that put in contract fine print that it will cost $500 to lodge a complaint, followed by the hurt party negotiating a time and place with the company for arbitration and then accepting the given arbitrator as the same town board with conflict of interest issues. (Submittal 337 – Ramsey, Gerald and Donna)

Response: The comment mischaracterizes the proposed process. The proposed Complaint Resolution Procedure does not require anyone to pay to lodge a complaint. The proposed Complaint Resolution Procedure is a reasonable and fair process for responsibly resolving issues that could arise. Conflict of interest charges are addressed in FEIS Section 6.9.1. Arbitrators are independent, and are mutually agreed upon. Cost of arbitration is addressed in FEIS Section 6.5.2.

6.5.5 Sheldon Complaints (306, 314, 319, 322, 325)

In Section C2 of Stony Creek Wind Farm LLC Public Documents it states:

> *...If a complaint from a Town resident or business is not resolved by Stony Creek at the local Project level within forty five (45) days of its receipt, to the satisfaction of the resident or business who filed it, that resident or business may request that the complaint be referred for resolution to an officer of Stony Creek Energy LLC. If the officer and the complainant are unable to resolve the issue within ninety (90) calendar days, the Town or their designated representative shall be notified and the complaint shall be referred to a mutually acceptable mediator, at a mutually acceptable time and location in New York State, in accordance with a mutually acceptable mediation procedure. The Town Board shall have first right of refusal to act as the mediator for complaints received by Town residents or businesses.*
>
> *Costs for mediation shall be paid equally on a 50/50 basis by the party making the complaint and by Stony Creek Energy LLC. Prior to incurring any mediation costs, both parties shall pay a deposit Into escrow to cover its share of the estimated costs of mediation. The minimum deposit from each party shall be $500.00.*

> *Stony Creek shall recommend appropriate mitigation measures that would reasonably resolve legitimate complaints. These include complaints related to noise, shadow flicker, dust, well interruption, interruption with television/broadcast reception, and other impacts to Town residents and businesses not specifically identified herein ....*

Complaints should not be limited to only Orangeville Town residents. There are others who might be affected by the consequences of Industrial Wind turbines due to shadow flicker, ice throw, fire, etc. Citizens should not be required to make a monetary deposit to file a complaint, nor should the Town of Orangeville have first right of mediator. Why does Invenergy/Stony Creek Wind Farm LLC have the power to recommend appropriate mitigation measures to resolve legitimate complaints - including as per Stony Creek Wind Farm, LLC "NOISE, SHADOW FLICKER, DUST, WELL INTERRUPTION, INTERRUPTION WITH TELEVISION / BROADCAST RECEPTION AND OTHER IMPACTS NOT SPECIFIED." Obviously they are already expecting complaints from these issues. Shouldn't the Orangeville Town's people have a voice in this? If Invenergy does not feel an Orangeville citizen's complaint is legitimate, does it get ignored? Shouldn't it take less than 4 months to obtain a mediator to resolve a complaint?

I understand that numerous Industrial Wind Turbine complaints have been brought to the attention of the Sheldon Town Board and Invenergy.

I ask that Invenergy and our Town Board please present with documentation: (i) How these complaints were resolved, (ii) When these complaints were resolved. (iii) How many complaints have ended in litigation? (iv) How long the total process took. (Submittals 306 – Davis, Barbara; 314 - Wilkinson, Nyla; 319 – Wilkinson, Ted; 322 – Kaczmarek, Jennifer; 325 – Bell, Ron)

Response: FEIS Section 6.5.1 discusses ability of non-residents to file complaints, and FEIS Section 6.5.2 discusses joint contributions to a mediation escrow account.

Sheldon Energy, the operator of the High Sheldon Wind Farm manages a complaint response procedure similar to the one being proposed in Orangeville. In total, Sheldon Energy has received calls or complaints about the wind farm from 26 households. Twenty (20) of these have been through the complaint hotline; six (6) of these have been through informal discussions with Sheldon Energy site personnel. Five (5) of the calls were from parties seeking a job, a wind turbine on their property, or similar information. Twenty one (21) were calls from parties conveying concerns about the wind farm, i.e., “complaints.”

Calls to the complaint line generally occurred during the period just before and just after the turbines began operating, with no new complaints received since July 2009. Table 33 summarizes when Sheldon complaint calls were received.

Table 33. Timing of Complaint Line Calls at High Sheldon Wind Farm

Period	Time Period	No. Calls Received	Notes
Construction. The wind farm was under construction during this period. The hotline was advertised during this period.	Jun ‘08 – Dec ‘08 (6 months)	3	All calls received were from individuals seeking jobs, turbines on their land, or similar information.
Commissioning. During this period the	Jan ‘09 - Feb	8	2 callers sought turbines on their land.

project was being commissioned. Some turbines were running periodically for testing, but the entire project was not operating and the project had not yet reached "commercial operation."	'09 (2 months)		1 caller reported a TV issue. 5 callers reported noise and/or shadow issues.
Operation – First 4 months	Mar '09 – July '09 (4 months)	9	2 callers expressed frustration with the town. 2 callers reported TV issues. 5 callers reported noise and/or shadow issues.
Operation – After first 4 months	Aug '09 – May '11 (22 months)	0	No calls have been received since July 15, 2009

The Town's standing to have first right to act a mediator is discussed in FEIS Section 6.5.6.

6.5.6 Determination of Reasonable Efforts to Resolve Complaints (55, 346)

I understand that numerous Industrial Wind Turbine complaints have been brought to the attention of the Sheldon Town Board and Invenergy. I ask that Invenergy and our Town Board please present with documentation: (i) How these complaints were resolved, (ii) When these complaints were resolved. (iii) How many complaints have ended in litigation? (iv) How long the process took.

This is why. According to Stony Creek Wind Farm complaint procedure, only Town residents can complain. So if you just own land here in Orangeville, or live just outside of the town or anywhere else that has the effects of noise, shadow flicker, cell/TV reception, ice throw, etc. sorry for you.

It states "Stony Creek shall make REASONABLE efforts to respond within 1 week" - What is reasonable? What's the penalty if they don't.

After 45 days, if the complainer is not satisfied, they "MAY request the complaint be referred for resolution to an officer of Stony Creek Energy, LLC'. If after 90 days it's still not resolved the town/representative is notified and the complaint is "referred to a MUTUALLY acceptable mediator, MUTUALLY acceptable time and location in NYS.. ... with a MUTUALLY acceptable mediation procedure. " So that's 4 months before anyone really looks into resolving the complaint. What if Invenergy just says it's not a convenient time or place or they don't like the mediation procedure - then what? 4 months is a long time without water.

"Costs for mitigation will be paid equally on a 50/50 basis". . .. by the complainant and "Stony Creek Energy LLC" In other words, you will have to deposit a minimum of $500 into an escrow account- and pay half of all costs. So, since Invenergy has a lot more money than anyone here - wouldn't it be to their advantage then to lengthen the mediation procedures? There should not be a cost to make a complaint on an Industrial company infringing on anyone's way of life.

And why does the "TOWN BOARD . .. have first right of refusal to act as mediator ... "

"Stony Creek shall recommend appropriate mitigation measures to resolve "LEGITIIMATE" complaints - including NOISE, SHADOW FLICKER, DUST, WELL INTERRUPTION, INTERRUPTION WITH TELEVISION / BROADCAST RECEPTION AND OTHER IMPACTS NOT SPECIFIED." Obviously they are already expecting these problems to occur. Who decides which complaints are

legitimate? Why can't the complainant recommend mitigation measures? Don't we have a right to Civil Court?

Invenergy states complaint resolution is intended to be from "start of construction ..... until the project is no longer in operation". Therefore if the turbines are shut down or Invenergy sells this project or just walks away, then who's responsible? (Submittal 055 – Anonymous, 346 – Wilkinson, Ted (verbal))

Response: FEIS Section 6.5.5 describes complaints received in Sheldon. The time to resolve complaints varies with the nature of the complaint and the parties involved. Television complaints can be investigated by a third party contractor relatively promptly. Concerns about shadows or noise can take longer to resolve because of difficulties in replicating the exact conditions needed to create the particular concern when all parties are present. In general, television concerns have been resolved within 3 weeks of reporting, noise and shadow complaints have been responded to with proposed mitigation within approximately 6 weeks of reporting.

FEIS Sections 6.5.1 and 6.5.2 address concerns about complaint response time, resolution time, and escrow funding.

If Stony Creek were to not make reasonable efforts to resolve conflicts, a mediator would presumably require Stony Creek to take reasonable action and as required by the complaint resolution procedure, Stony Creek would be required to pay mediation costs. The Complaint Resolution will be in effect for the duration of the Project's operation.

The Town's Zoning Law requires Stony Creek to submit a Complaint Resolution Procedure for its review and approval. Implementation of the Complaint Resolution procedure will be a condition of any Special Use Permits that may be granted. Thus the Complaint Resolution Procedure would be in effect as long as the project is permitted. After the project has exceeded its useful life, Stony Creek is required to decommission the Project.

As the jurisdiction responsible for enforcing the Town Code and permit conditions, the Town Board should have the first right to act as mediator.

Nothing in the complaint resolution procedure limits the Town's ability to enforce the local ordinance, prevents a complainant from proposing mitigations, or limits any private party's right to seek judicial assistance.

6.5.7 Turbine Operation in Absence of Wind (339)

Does Invenergy drive the generators when there is not enough wind or do they just stop running all together when it is not windy? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: DEIS Section 1.5.1 and DEIS Table 5 describe turbine operation at a range of wind speeds. When the wind speed at hub height is below the cut-in wind speed (3.5 m/sec for the GE 1.5xle and for the 1.6-100) there will not be enough wind to generate electricity. In these conditions, the turbine rotor (i.e. the hub and blades) will be free to rotate, but whether or not it rotates depends on the level of the relatively low wind speeds. At speeds just below the cut in speed, the rotor will be rotating, but the generator will not "cut-in" to generate electricity. At speeds near zero, it is unlikely the rotor will rotate. Under no condition will the turbine draw

electricity to rotate the turbine rotor for the purpose of giving the appearance that the turbines are generating electricity.

6.5.8 Vendor's Maintenance Schedule (341)

Please provide a copy of the turbine manufacturer's scheduled maintenance program. (Submittal 341 – NYS Dept of Public Service)

Response: The vendor's maintenance manuals are confidential documents that Stony Creek is not at liberty to provide in a public document such as the DEIS or FEIS. DEIS Appendix I Section outlines general maintenance tasks to be performed by the operations staff.

Typical wind turbine maintenance tasks will include checking fluid levels, tightening bolts, changing oil, and performing visual inspections. Typical tools are hand tools, torque wrenches and other equipment used for mechanical maintenance. Detailed maintenance tasks and schedules beyond that provided in the DEIS and FEIS are outside the bounds of the DEIS Scope.

6.5.9 Vegetation Management for Substation Areas (341)

A vegetation management plan in and around the substation should be included. Any vegetation which could endanger the safety and operation of the turbine should be the responsibility of Stony Creek Energy, LLC. (Submittal 341 – NYS Dept of Public Service)

Response: FEIS Appendix A.3.d includes an updated ROW and Vegetation Management Plan that includes provisions for managing vegetation in and around the substation.

6.5.10 Herbicides and Pesticides (124, 291, 341)

The following concern was not properly addressed in the DEIS that was submitted to the Lead Agency for the Stony Creek Wind Farm Project: The use of herbicides in maintaining the turbine facilities will cause damage to the water quality in watersheds and wells, and the inevitable spills lubrication fluids and cleaning agents will damage the environment. (Submittal 124 – Orlowski, Joseph)

Ongoing management of the substation-switchyard location, including any use of herbicides or soil sterilants to preclude vegetation establishment within the area of high-voltage electrical equipment, should be based on measures to avoid off-site impacts including discharge to the receiving water body. Soil sterilants are susceptible to rapid translocation during rainfall events following application of these materials to surface cover gravel-aggregate material. (Section 3.14.7 - Use of Pesticides or Herbicides - does not specifically address standard substation switchyard maintenance practices, including use of soil sterilants, as discussed above.) (Submittal 341 – NYS Dept of Public Service)

Will use of commercially available pesticides and herbicides around WTG bases take place in agricultural fields? Will permission of the landowner be obtained for such use on all leased property, including agricultural fields? (Submittal 291 – Stantec)

NYSDEC standards exist for commercial applicators of pesticides/herbicides. If Stony Creek will apply pesticides/herbicides themselves, are these the standards that will be followed? (Submittal 291 – Stantec)

What practices or standards will apply to storage of pesticides/herbicides? (Submittal 291 – Stantec)

Response: Stony Creek will comply with the updated ROW and Vegetation Management Plan in FEIS Appendix A.3.d. This plan includes provisions for Stony Creek's use and storage of herbicides and pesticides.

6.5.11 Dig Safely NY (341)

Developer should provide a statement from a responsible company official that: (a) Company and its contractors will conform to the requirements for protection of underground facilities contained in Public Service Law §119-b as implemented by 16 NYCRR Part 753; (b) Company will comply with pole numbering and marking requirements as implemented by 16 NYCRR Part 217. (Submittal 341 – NYS Dept of Public Service)

Response: The requested statement is provided in FEIS Appendix A.3.a.

6.6 Permits and Approvals

6.6.1 CPCN Requirement (341)

Please note that pursuant to Public Service Law §68, Stony Creek Energy LLC will be required to obtain a certificate of public convenience and necessity (CPCN) as the proposed facility is above 80 MW. The §68 review includes consideration of the capability of the developer to function as an electric corporation and to provide safe and reliable service. The §68 review can proceed only on receipt of an application by the developer including a verified statement by a responsible official of the company showing that it has received all the necessary and legally required municipal consents giving it the right to use town property such as right of way of public streets. Consideration of the §68 petition will also require that DPS coordinate with the Office of Parks, Recreation and Historic Preservation pursuant to §14.09 of the Parks, Recreation and Historic Preservation Law unless there is a federal agency review that implements §106 of the National Historic Preservation Act. (Submittal 341 – NYS Dept of Public Service)

Response: The comment largely recites the relevant regulatory scheme, and those points are acknowledged. Any deviations from the requirements are detailed in the DEIS/FEIS.

6.6.2 DEC Stream and Wetland Permits (382)

Projects that propose to disturb regulated wetland areas, buffer areas and protected streams require permits from NYSDEC and the U.S. Army Corps of Engineers (USACE). NYSDEC wetland permit regulations at 6 NYCRR 663.2(z) define a "regulated activity" as any form of draining, dredging, excavation, or mining, either directly or indirectly; any form of dumping, clear cutting or filling, either directly or indirectly; erecting any structures, constructing roads, driving pilings, or placing any other obstructions whether or not changing the ebb and flow of the water; any form of pollution, including but not limited to installing a septic tank, running a sewer outfall, discharging sewage treatment effluent or other liquefied wastes into or so as to drain into a wetland; or any other activity which substantially impairs any of the several functions or benefits of wetlands which are set forth in section 24-0105 of the (Freshwater Wetlands) Act. These activities are subject to regulation whether or not they occur upon the wetland itself, if they impinge upon or otherwise substantially affect the wetland and are located within the adjacent area.

Before NYSDEC can consider a permit application, wetland delineations prepared for the project must be verified by agency staff. NYSDEC jurisdiction and resulting acreage impacts may vary based on NYSDEC verification of wetland delineations. It is NYSDEC policy that wetland impacts are not permitted, even with mitigation, until other alternatives have been explored, including avoidance, minimization or reduction of impacts. Generally applicants are required to: 1) Examine alternative project designs that avoid and reduce impacts to wetlands; 2) Develop plans to create or improve wetlands or wetland functions to compensate for unavoidable impacts to wetlands; 3) Demonstrate overriding economic and social needs for the project that outweigh the environmental costs of impacts on the wetlands.

The NYSDEC guidance document, Freshwater Wetlands Regulation Guidelines on Compensatory Mitigation, October 26, 1993, states that "Temporary disturbances, where pre-construction conditions are essentially restored, for example when laying a pipeline, do not require

compensatory mitigation since there is no permanent loss. However, impacts to the wetland still must be first avoided and then minimized as with any other project, and efforts to reduce disturbances during construction, such as erosion control, will still be required." USACE defines "permanent" impacts as the loss of waters of the United States, and includes the area where fill is placed plus areas that are adversely affected by flooding, excavation or drainage as a result of a project. Where the project area is restored to pre-construction contours and elevation, it is not included in the calculation of permanent loss of waters (permanent impacts). This includes temporary construction mats (e.g. timber, steel, geotextile) used during construction activities and removed upon the completion of the work. However, where certain functions and values of waters of the United States are permanently adversely affected (such as the conversion of a forested wetland to an herbaceous one in a permanently maintained utility right-of-way), USACE requires mitigation to reduce the adverse affects of the project to the minimal level. The wetlands analysis in the DEIS should be refined to apply the full range of potential impact criteria to the proposed construction activity in the determination of total area of permanent impact; not just those areas proposed for permanent placement of fill. This is necessary to quantify the total affected area for permitting and requirements for mitigation.

Simple re-grading to pre-construction contours following excavation in a wetland area may not be enough to restore the full function of the existing wetland area. Any clearing or grading that disturbs wetland soils can result in permanent impacts to wetlands. Grading a wetland or adjacent area can substantially alter surface water drainage and flow patterns, may temporarily increase erosion, and may eliminate fish and wildlife habitat. Clear-cutting removes the vegetative cover of wetlands and may reduce their ability to absorb water and serve as habitat, and can also cause soil erosion. Dredging or excavation may increase water depth and remove wetland vegetation, thus altering the basic characteristics of, and perhaps destroying, wetlands. Fish and wildlife feeding or reproductive capacities may be altered, as may cover types, turbidity, sediment deposition, and erosion patterns. Clearing vegetation and any form of soil disturbance can lead to the introduction of invasive plants. Any of these activities can cause the permanent loss of benefits provided by wetlands and may, in fact, destroy wetlands entirely. (382 – NYSDEC)

Response: The comment largely recites the relevant regulatory scheme, and those points are acknowledged. Any deviations from the requirements are detailed in the DEIS/FEIS.

Since the DEIS was published project plans have developed sufficiently that the location of proposed ground disturbing activities have been identified. The availability of these data facilitated the completion of wetland delineations as discussed in FEIS Section 4.15.

The analysis of impact areas discussed in Section 4.15 addresses those areas that may be permanently impacted, including areas that may be converted from forested wetlands to non-forested wetlands or areas that could experience construction impacts that could have longer term consequences and impacts as discussed in the comment.

Stony Creek will construct the Project to avoid or minimize permanent impacts to streams and wetlands to the maximum extent practicable and in accordance with all permits on wetlands and stream crossings that may be issued by the U.S. Army Corps of Engineers and the New York DEC. Results of the wetland delineation study discussed in FEIS Section 4.15 will be used to develop applications for such permits.

6.7 Comprehensive Plan and Zoning

6.7.1 Town Law and Comprehensive Plan (065, 367)

I would ask that you seriously consider my comments regarding the Draft Environmental Impact Statement. In my comments submitted to you at the May 7, 2009 Public Hearing, I stated that the draft zoning law was not consistent with all of the objectives of the Town's Comprehensive Plan. Specifically, the Town's Comprehensive Plan states:

- *Residential areas should be buffered from commercial and industrial areas.*
- *Keep residential area free from incompatible and inharmonious uses.*
- *Allow development of alternative energy sources to take place within the Town, but to direct it to those areas that are most appropriate.*

Several residents have asked the Town to consider Wind Turbine district overlays. The Wyoming County Planning Board also submitted similar comments to the Town in its response in April of 2009. (Submittal 065 – Humphrey, Peter, 367 – Humphrey, Peter (verbal))

Response: Although these comments are not appropriate to this review because they are directed to the law and not the Project, because of the serious inaccuracies in the comments we note the following: The local law and the Stony Creek proposal are both fully consistent with the Town Comprehensive Plan. As Judge NeMoyer recently wrote in rejecting the same challenge:

> Petitioner alleges that, in violation of Town Law § 272-a, the zoning amendments conflict with that formal Comprehensive Plan. Petitioner concedes, however, that the Comprehensive Plan articulates that one important zoning goal of the Town is to "allow development of alternative energy sources to take place within the Town but direct it to those areas that are most appropriate," for the purpose of "[e]liminat[ing] or reduc[ing] dependency on fossil fuel and foreign energy. Thus, in both permitting and closely regulating wind energy development, the zoning amendments comport rather than conflict with the Town's Comprehensive Plan.[57]

The local law, in fact, accomplishes what the commenter requests. Residential areas are buffered by both limits on where wind projects can be located and the extensive noise and distance setbacks. Wind farms are only permitted in certain zones, and the Town Board has full power to approve, approve with conditions, or disapprove wind farms in the law as written.

6.7.2 Land Use Statements in Executive Summary (334)

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

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[57] *Clear Skies Over Orangeville vs. Town Board of the Town of Orangeville*, Index No. 44323, Dec. at 27-28 (Sup. Ct, J. NeMoyer, April 19, 2010)(copy included in FEIS § _).

Page 20 [xx] - The Project will not create a significant change to the underlying land use patterns in the Project Area, and therefore will not impact future residential development or recreational opportunities.

Page xx - The Project is generally compatible with existing land use patterns in the Town of Orangeville and the Town Comprehensive Plan, because it preserves the rural character and nature of the Town of Orangeville...

There are many more examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

Response: The commenter appears to base his statement on excerpts from the DEIS Executive Summary. By definition, a summary does not include all the detail and references supplied in the text. Taking the commenter's examples, Section 3.2 (Land Use) discusses existing land use and cover, floodplains, steep slopes, future residential development and recreational opportunities, and compliance with the Orangeville Comprehensive Plan. The text includes tables showing existing conditions, temporary impacts, and permanent impacts by habitat type and project element. The data is not "asserted", but is referenced with an explanation of the analysis procedure and illustrated by supporting maps. For the examples cited above, data sources include the Federal Emergency Management Agency, the National Land Cover Database, and the Town of Orangeville Comprehensive Plan. Additional support for the summary statements above may be found in other (referenced and footnoted) sections of the DEIS.

6.7.3 County Guidelines (291)

Wyoming County guidelines are missing from Appendix J. (Submittal 291 – Stantec)

Response: The document is included in FEIS Appendix B.a.

6.7.4 Survey (131, 132)

I would like to know what happened to the initial proposal of 27 to 44 industrial wind turbines that was in the letter sent out with the 2008 survey? I would like to know why I was excluded from the initial survey regarding wind turbines sent out in 2006? How many other taxpayers were either excluded from the 2006 and/or 2008 surveys? The results can hardly be 2 to 1 in favor when all the taxpayers did not receive the surveys. I am hoping that the town board takes their responsibility to all residents of Orangeville seriously and provides answers to the questions I have posed. You were elected to represent all the residents of Orangeville. (Submittal 131 – Jensen, Kathleen)

I would like to know why I was excluded from the initial survey regarding wind turbines sent out in 2006? You were elected to represent all the residents of Orangeville. I hope you start taking your responsibilities seriously and quit this headlong rush into accepting this obviously flawed DEIS. Once these industrial turbines are erected, the landscape and the beauty of Orangeville will be destroyed forever. (Submittal 132 – Jensen, Paul)

Response: The survey, which was about the local law adopting a new zoning code, is not relevant to this SEQRA review. The Town Board adopted that law based on the Town Comprehensive Plan and the record developed during a multi-year investigation including numerous public comments. The Town Board has always considered seriously its responsibilities to the whole community and will continue to do so.

As to the visual impact, these impacts are considered fully in DEIS Section 3.8 and FEIS Sections 4.2 and 6.21.

6.8 Topography, Geography and Soils

6.8.1 Geotechnical Information for ECS and Foundation Designs (338)

Based on conversations with Project Applicant staff, a subsurface (geotechnical) investigation will be performed on the Project site to identify subsurface conditions and to allow for the development of final design specifications for Project improvements. The Department recommends that the Project Applicant utilize the data contained in the geotechnical investigation report to identify subsurface constraints along portions of the buried electrical collector system and turbine foundations. In addition, a professional soil scientist should be utilized to gather site specific soils information for incorporation into final site designs. According to the USDA Soil Survey, Lordstown and Tuller soils have shallow depths (20" – 40") to lithic bedrock. T-32, T-33 and T-34 foundation sites, while non-agricultural sites, will likely encounter large volumes of waste rock during excavation activities. Waste rock encountered during foundation and/or ECS trench excavation should be segregated from topsoil and other suitable subsoil backfill material. Other areas of the Project site are dominated by glacial-derived fragipan soils as described above. Constraints include poor drainage, lateral vs. vertical shallow groundwater flow, shallow depth to groundwater, apparent seasonal high water table, etc. These factors should be taken into account when designing the buried ECS cable routes and turbine foundation sites. (Submittal 338 – NYS Dept of Ag and Markets)

Response: As part of the pre-construction engineering review process,[58] further geotechnical investigations will be completed at proposed foundation sites and data generated in the study will be a critical element of site specific designs for each foundation. If during open trenching for ECS trenches or foundation excavation Stony Creek encounters waste rock unsuitable for use as backfill, Stony Creek will dispose of such material in a manner approved of by the landowner and in compliance with all applicable state and county laws. Constraints posed by shallow soils, poor drainage, and high groundwater, if any, will be considered in the project design. Disposal of unused excavation material is also discussed in FEIS Section 6.10.9.

6.8.2 Limitations of Glacial Soils (283)

Wyoming County is underlain by bedrock of the Devonian Age (Wyoming County, Soil Survery). The Bedrock found in Orangeville is Shale. The Soil was deposited during the Wisconsin glacial stage of the Pleistocene epoch. The Valley Head Drift Sheet and the Binghamton Drift Sheet consisted of glacial till, ground moraine, proglacial fluvial deposits, and proglaciallacustrine sediment (Wyoming County, Soil Survey). This motion and movement of sediment allowed for Kame deposits and Kame terraces to form along the Tonawanda and Stony Brook Creeks. Kame deposits are moundlike hills of layered sand and gravel that vary in size. Kames are unique geological formations because they are only one of many forms with essentially the same origin. The stratigraphic process that forms Kames is complicated. The process leads to flexures in some layers, small gravitational faults, and beds dipping at angles well beyond the angle of repose of such material. Attached are photos of a Kame deposit and a Kame terrace in Orangeville. Kame

[58] Because building permits are not issued by the Town, the pre-construction engineering review process is employed, wherein the Town's outside engineer reviews and, if acceptable, approves the foundation design prepared by Stony Creek's engineer.

deposits and terraces are stratified glacial facies and include gravels, sands, and silts, some of which may be extremely stratified (Principles of Sedimentology and Stratigraphy, 2nd Edition).

Under the current zoning regulations for wind turbine development in the town, there are no restriction on areas within Orangeville where Kame deposits and terraces exist. The only provision that addresses soil erosion or ability of the local soils to support wind turbine development, including the concluding construction and maintenance of new or existing roads, are found in Subsection 13. This subsection incorporates standards for protecting agricultural soils when siting wind turbines, for state-wide use, developed by NYS Department of Agriculture and Markets. However, no provisions show any awareness of the unique and unusual landforms found in Orangeville and the limitations on their use or disturbance within the DEIS.

In my professional opinion, informed by my review of the soil survey for the Orangeville area and field studies, there are substantial areas in the town where the land disturbance wind turbine siting requires is not feasible, or should be substantially restricted. The DEIS needs to emphasize restrictions for wind turbine development and incorporate protections that address such limitations in areas characteristic and classified as Kame deposits and as a kame terraces. By failing to address such limitations wind turbine development in the town will significantly affect unique geological formations that will produce increase erosion, sediment flow, and landslides. The DEIS should therefore incorporate protections adequate for the known geological formations that exist within the town. The DEIS does not mention the locations for these unique landforms within the Project Area. (Submittal 283 – Geoghegan, Heather)

Response: Review of standard references, such as United States Geological Service or New York State Geological Survey Maps (e.g. *Surficial Geologic map of New York, Niagara Sheet*, Caldwell, NYSGS, 1988) show that kame deposits and kame terraces are not unique to the project area. In fact, these features are fairly common in glacial terrains, and occur throughout the northeastern US including New York State, northern Pennsylvania and Ohio.

Modern construction techniques, supported by geotechnical data collected from the specific sites where turbines would be placed, can safely erect wind turbines in the types of soils described.

Environmental impacts relative to the construction and soil types are outlined in the DEIS. The spread footer foundation which will be used for the Project is approximately 5 feet thick and 45 feet wide. This will distribute the weight and provide stability for the WTG. Final design of the foundations in the pre-construction engineering review process phase will occur after site specific geotechnical evaluations are completed for the approved tower foundation sites. Where kame deposits are encountered, engineering controls such as benching and shoring may be used to provide stability and safety during excavation activities. For road building, suitable sub-base materials and geotextile fabrics will be used to ensure that structural integrity is maintained. Foundation and road design will appropriately consider soil conditions so that landslides are not a concern. No unusual design measures are anticipated to prevent landslides in the Project Area.

Erosion will be minimized by employing erosion control techniques as in the final Stormwater Pollution Prevention Plan (SWPPP) required to obtain the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001). These standards are in place to prevent erosion of slopes and open cuts during the construction process. Standards that may be required in the plan include temporary fabric on exposed slopes, reseeding of finished areas,

and run–off check dams. Based on the required standards in place through the NYSDEC SPDES permit, there is no evidence to support the concern that construction in these soils will increase erosion or sediment flow.

6.8.3 Bedrock, Blasting, and Wells (289)

An important property for engineering includes depth to bedrock. Depth to bedrock affects septic tank filtration fields, pipeline installations, foundations and agricultural activities. Bedrock as defined by The Dictionary of Geological Terms 3'd Edition: the solid rock that underlies gravel, soil or other superficial material. The Soil and Survey of Wyoming County, New York, 1974 (psO-61) nicely details the approximate depth to bedrock across the Township (sic) of Orangeville. One can collectively say the depth ranges from 0 feet to more than 4 feet below surface (below grade).

The depth to bedrock impacts a soils rate of saturation, drainage, and filtration. The bedrock found in Orangeville was formed during the Late Devonian Age and is called Shale. Shale is defined by The Dictionary of Geological Terms 3'd Edition as a fine-grained detrital sedimentary rock, formed by the compaction of clay, silt, or mud. It has a finely laminated structure, which gives it a fissility along which the rock splits readily, especially on weathered surfaces. Exposed Shale has a higher fissility. There are many locations in Orangeville where one can see exposed bedrock (rock outcrop). Refer to attached photos of bedrock exposure in Orangeville.

Current zoning regulations for wind turbine development in the town, lists no restrictions to areas where bedrock is close to the surface and pad construction for a wind turbine involves removing bedrock, or alternate measures to bury high tension cables for industrial wind turbines. The current zoning makes no mention to bedrock exposure or the depth to bedrock in the town. The DEIS does not describe the depth to bedrock and or mention the numerous rock outcrops found in Orangeville.

The DEIS only mentions observing dwellings within 500 feet of a turbine pad for damages to foundations and wells during construction of Industrial Wind Turbines. Industrial Wind Turbine construction can cause irreversible damages to aquifers, aquitards and ground water flow for all in the Project Area and edges of the Project Area. "Blasting" Shale can cause mini faults within the series changing flow of the aquifer. "Blasting" will also cause structural damage to an individuals' home. Hydraulic Fracturing of Bedrock introduces several chemicals to the formation.

In my professional opinion, informed by my review of the soil survey for the Orangeville area, Geological Surveys, and field investigations, there are substantial areas in the town within which the kind of land disturbance wind turbine siting requires is not feasible, or should be substantially restricted. However, the current zoning regulations for wind turbine development fail to incorporate protections that address such limitations on development. The DEIS needs to incorporate protections adequate for the known bedrock exposures and shallow soil surface depth that characterize the land in Orangeville. The DEIS does not mention construction methods in areas of exposed or shallow bedrock. The DEIS does not mention plans to protect domestic wells or verify these wells will not be affected by Industrial Turbine construction. The DEIS needs to incorporate verification that Industrial Turbine Construction will not adversely affect wells and building foundations. (Attachment: photos3 pp.) (Submittal 289 – Geoghegan, Heather)

Response DEIS Section 3.15.1 notes that rock likely to be encountered during construction will be removed by mechanical means (excavation), and the need for blasting is not anticipated. Hydrofracking is used to extract natural gas from shale formations, not construct turbine foundations, and thus will not be used during Project construction. Blasting, while unlikely to be necessary, is addressed in DEIS Section 3.15 and FEIS Section 6.29. The commenter's concerns relative to building foundations and groundwater are further addressed below.

There is broad experience in the construction industry with blasting in the type of bedrock formations found in Orangeville. DEIS Section 3.15.1, and DEIS Appendix I.11 (Blasting Plan) further note, regarding protection of building foundations, that:

1) WTG foundations are no closer than 1,320 feet to the nearest residences owned by non-participating landowners,
2) explosive charges will be limited to the intensity needed to fracture rock at the immediate location or the foundation, and
3) vibrations at 1,000 feet away will be 4 times less than the conservative recommended vibration limit.

No effects on non-participating residential foundations are therefore anticipated.

Similarly, regarding protection of wells, DEIS Section 3.15.1 notes that

1) It is reasonable to assume that water wells will be located within 50 feet of residences;
2) Explosive charges will be limited to the intensity needed to fracture rock at the immediate location or the foundation, and
3) Vibrations at the 1,000 feet awaywill be 8 times less than the conservative recommended vibration limit.

Therefore, no effects on wells are anticipated. However, as discussed in DEIS Section 3.15.1:

- Prior to conducting any blasting, Stony Creek will conduct a pre-blasting survey of structures within ¼ mile of the blast site (on both participating and non-participating properties) so that any damage from blasting can be verified, and Stony Creek would be responsible to repair such damage.
- Prior to conducting any blasting, Stony Creek will conduct a pre-blasting survey of groundwater wells located 500 ft or less from the blast site so that any damage from blasting can be verified, and Stony Creek would be responsible to repair such damage.

6.8.4 Accuracy of DEIS Information on Soils and Physiographic Region (058, 282, 357, 280, 287, 291)

Section 3.2 Existing Site Conditions lists the "so called" Soils of Orangeville. This describes 13 soils which do not exist in the Town of Orangeville. This report also lacks 31 soils characteristic to the Town of Orangeville and the "Project Area". The soils map used for your soil classification and Identification and submitted with the DEIS is not the same as the soil map from the Soil Survey of Wyoming; County, New York; 1974. In fact, they moved the Project Area. How convenient.

According to the Draft Environmental Impact Statement (DEIS), Orangeville is described as being located within the Alleghany Plateau. This is not true. Orangeville is located in the Upper Appalachian Plateau. "Geologically, the deposits of soil materials in the county are very young.

Most of the material was left after the last glacier melted 11,000 years ago." The DEIS section 3.2 paragraph 1 sites the soil being 18,000 years old. Clearly the information obtained for the DEIS was not accurately reviewed, studied, analyzed or researched. Stantec (sic) didn't even mention the right soil that is dominant in the Proposed Project Area. (Submittals 058 – Geoghegan, Heather; 282 – Geoghegan, Heather; 357 – Geoghegan, Heather (verbal))

Section 3.1.1 Existing Topography (Page 47); the first sentence indicates that "the Project Area is located within the Allegany Plateau physiographic region of Western New York. We suspect this may be a relic or leftover from an earlier document. According to the Phase IA Cultural resource Study, as well as other sources, the area is described as within the Appalachian Uplands Physiographic Province. Which physiographic region of Western New York is the project area located in? (Submittal 280 – Core Environmental)

The DEIS does not list the soils of Orangeville, in fact the soils they mention include 13 not characteristic to Orangeville and do not mention 31 types of soils found in the Project Area. (Submittal 287 - Geoghegan, Heather)

Based on our review of the USGS information (http://websoilsurvey.nrcs.usda.gov/appNey.aspx), we concur with the soils types listed in Table 9. (Submittal 291 – Stantec)

Response: The soils map presented in the DEIS is consistent with current information available from the USGS/NRCS online Web Soil Survey available at: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. The project is located in the Allegheny Plateau section of the Appalachian Uplands (Highlands) Physiographic region. The 1974 Soil Survey for Wyoming County indicates soils in the area are approximately 11,000 years old. The DEIS statement referenced by the commenter does not appear in DEIS Section 3.2. DEIS Section 3.1.1 correctly states that Pleistocene glaciers covered Western New York approximately 18,000 years ago.

6.8.5 Orangeville Mud (131)

When will an accurate study depicting the correct soil types be done? When building my home 17 years ago the local contractor ran into what he described as "Orangeville mud". I considered it closer to quicksand because if you happened to stand in it, you started to sink and it was extremely difficult to get out of. (Submittal 131 – Jensen, Kathleen)

Response: As discussed in FEIS Section 6.8.4, the DEIS soils map is consistent with the best information currently available. During the pre-construction engineering review process phase geotechnical investigations will be completed at proposed foundation sites and data generated in the study will be a critical element of site specific designs for each foundation. Any "Orangeville mud" encountered will be taken into account with the specific foundation design. Unstable soils should not impact ECS installation because the trenching equipment is track-mounted to reduce ground pressure and because the installation method does not require that the full trench be maintained open for more than a few minutes. In one continuous operation, the trenching machine will excavate the trench, place the cable, and backfill over the cable. This quick operation will minimize chance of the trench collapsing, even with unstable soils. This ECS trenching method has been successfully used by utility contractors for many years in all kinds of soils to install gas, telecommunications and electric utilities.

6.8.6 Silty Soils and Landslides (338)

The Department has been made aware of soils limitations and relatively new information in connection with the proposed Project which may be of interest to the Town and Project Applicant. The Department strongly recommends that soils information be more closely analyzed during this SEQR review process and should be addressed prior to the release of the Final Environmental Impact Statement (FEIS).

Department staff has been involved in the extensive review of site soils in connection with commercial wind energy facilities and natural gas pipeline construction projects in Western New York. During these reviews, Department staff encountered a somewhat unique soil type which may pose a significant constructability impediment if the appropriate investigative and engineering measures are not implemented prior to and during construction. The Department has witnessed the effects of these soils while performing construction monitoring on construction projects throughout the highly glaciated uplands of the Allegany Plateau physiographic province.

These soils are MnB (2 to 6% slopes) and MnC (6 to 12% slopes); Mardin and Volusia channery silt loams, silty substratum. According to the USDA Soil Survey, these soils have a silty stone-free layer in the substratum and are susceptible to landslides. Landslides have occurred as a result of a stream undercutting the toe of a slope. On the steeper slopes, the soils are susceptible to down-slope slippage especially when cuts are made into the toe slope.

Specifically, the concern is that in agricultural fields, the (excavation) penetration into the very well expressed fragipan layer [at 10 to 20"] will lead to the subsequent creation of a drainage envelope, waterboils, "blow outs" or wet spots; usually at a break or transition in topography, i.e. toe of slope, if the appropriate in-trench controls are not installed during construction. The fragipan material of Mardin and Volusia is usually something that can withstand significant "washing" action than other subsoils before actually eroding due to their tight-bonded structure. However, once the fragipan layer is penetrated and the silty lacustrine sediments are exposed, instability is increased, shear strength is decreased, and significant trench wall cave-in is highly likely while the trench is exposed during the duration of subsurface construction activities (i.e., buried ECS cable installations, and major grading including cuts or benching required during the construction of some of the finished grades required for access roads and turbine foundations). This condition is additionally exacerbated especially when soils become saturated.

The properties described above warranted additional inquiry into the specific nature and properties of these soil types. Therefore, Department staff contacted the USDA-MZCS Resource Soil Scientist for Western NY who is overseeing the soil survey team currently mapping soils in adjoining Allegany County. According to the USDA Resource Soil Scientist, this "2-tier" Mardin I Volusia is significant enough that in Allegany County, located adjacent to Wyoming County, they [the Soil Survey Team] have made a new series to emphasize its landslide behavior.

The lead Soil Scientist for soil survey programs in Western NY, stated the following:

> *"Since the time Allegany (County) was mapped, new series have been set up to accommodate this multiple deposit (till over lacustrine silts). Rushford is the new series that would cover the MWDr (Mardin) areas and Wiscoy is the new series that would cover the SWPDr (Volusia) areas. The thinking was, in setting up these new series, that they behaved significantly different than the*

Mardin/Volusia series and we wanted to bring that fact to the (Soil Survey) users' attention. Both the new series were set up to have a lithologic discontinuity (silts) within 40 inches, though in many areas they will occur deeper than that. In some areas the lithologic discontinuity is not real well expressed, but is more of an intermixed silty till deposit and still likely to have stability issues if excavated or landslide potential if the toe of a slope is cut out and the soil becomes saturated. These are areas that should definitely be further investigated for these types of intensive uses."

The similarly glaciated nature of the Appalachian uplands in adjoining Wyoming County suggests that it is possible for these lacustrine-influenced soils to occur along any of the north-flowing river valleys, or their tributaries, in Western NY. With that being said, it's unlikely that these soils would be an issue for the locations of the turbines themselves, as these soils generally occur along the lower valley sides while the wind towers are situated at the highest elevations in the county which are dominated by straight till over bedrock. However, it is possible that these soils could be encountered during some of the activities related to the construction of a commercial wind energy facility (access roads, buried ECS cables, etc).

Because of the concerns outlined above, and the fact that these soils are not accurately mapped and the likelihood that hidden "inclusions" of these soil types may be encountered in certain areas, the Department recommends that a more in-depth, field-level investigation of soil types be conducted by a professional soil scientist in order to accurately identify areas having these soil types. Detailed soils investigation should be conducted in addition to the scheduled geotechnical investigation conducted for the purpose of turbine foundation design. This will allow for the adequate pre-planning and design and/or avoidance routing during the early stages of Project development. Particular attention should be made to areas near the north flowing streams located in the northeast portion of the proposed project area. Areas confirmed as having these soil types should be identified in the FEIS and engineering methods and or contingencies be developed to aid in the site-specific design of appropriate precautionary measures for heavy use areas, i.e., areas along where cut/fill and or benching on moderately steep to steep slopes is proposed should an un-mapped "inclusion" be encountered in the field during construction. The Department recommends that fragipan soils in the vicinity of the proposed Project area be delineated and identified on construction drawings. Subsurface drainage measures will be required in agricultural areas where excavation penetrates the fragipan layer in order to effectively alleviate the inherent groundwater migration along backfilled trenches in agricultural soils. (Submittal 338 – NYS Dept of Ag and Markets)

Response: The information contained in the comment was not available to Stony Creek during the drafting of the DEIS, however there has been heightened awareness of these concerns among Western NY geotechnical professionals due to the Route 219 landslide concerns. As stated in the comment it is unlikely that the soils will be encountered during construction of the WTG foundations. Site specific geotechnical studies and other investigations conducted in the pre-construction engineering review process phase will supplement the geotechnical work done in the DEIS, which covered environmental concerns including identifying site specific soil issues by use of site specific investigations. Pre-constructing testing of all soils in the ECS corridor would be impractical due to the large length of ECS cables to be installed. However, if these soils are encountered during construction, engineering controls such as benching and shoring can be used to provide stability and safety during excavation

activities. For road building, suitable sub base materials and geotextile fabrics will be used to ensure structural integrity is maintained. Measures to mitigate against water flow along ECS trenches are discussed in FEIS Section 6.10.8.

Based on the information provided by the commenter indicating these new soils groups are likely to be found in the northeast quadrant of the Project Area along north flowing streams, Stony Creek has identified three locations where these soils may be encountered during Project construction. These areas are:

- ECS installation between T-13 and T-08;
- ECS installation between T14 and T-24; and
- ECS installation between T-13 and T-29.

Construction of ECS requires minimal open cut areas and therefore is unlikely to produce the type of conditions that would result in significant soil erosion or soil slumping. When installing ECS cables in areas that are (i) near north-flowing streams, and (ii) north of Route 20A and east of Nesbitt Road, Stony Creek will carefully monitor soil conditions to ensure soil stability is maintained and landslides do not occur. The environmental monitor on-site during construction will instruct personnel overseeing trenching in the areas above of the risk of unstable soil, methods of identifying such conditions, and to contact the environmental monitor if such conditions are encountered.

6.8.7 Soils Unsuitable for Construction (285)

Impact on Land Construction on slopes. The American Association of State Highway Officials System (AASHO) is used by soil scientists to classify soil using specific properties which affect highway construction and maintenance. The AASHO system breaks down soil into 1 of 7 groups (A-1 through A-7). Soil is broken down based on its grain-size distribution, liquid limit, and plasticity index. Using the AASHO System A-1 soil is characterized as gravelly soils for subgrade (foundation). However, groups A-7 are clayey soils and have low strength when wet and are the poorest soils for subgrade.

Reviewing the Soil Survey of Wyoming County, New York; April, 1974, p45, majority of the soils found in the Town of Orangeville are A-4 and higher using the AASHO system. There are a few A-2 and A-1, but the majority are A-4 and higher. This verifies what most in Orangeville already know: our soil is poor for highway construction, maintenance and has poor drainage. Examples of roads in constant distress include and are not limited to: Krotz Rd, Buffalo Rd, Nesbitt Rd and Mengs Rd.

Majority of the area in Orangeville is classified as being either the Volusia-Mardin Association or the Bath-Valois Association. The Volusia-Mardin Association is found in higher elevations, most of the soil in this association is undulating and include fairly wide saddles of nearly level soils that generally are wet. Most farmers need drainage. The Bath-Valois Association are described as Morainic Uplands and typically gravelly, sandy glacial outwash and well drained. Other Associations found in Orangeville are the Varysburg-Williamson-Churchville Association, Manlius-Lordstown Association, Bath-Mardin Association, and the Caneadea Association. These soil associations formed as a result of glacial till deposits, glacial deposits or glacial lake sediment and the majority of these soils are reported as having a severe slope (8-15% and higher) (The Soil and Survey of Wyoming County, New York, April 1974, Table 7).

Current zoning regulations for wind turbine development in the town, contains no restrictions for areas within Orangeville where soil types are incapable of sustaining the heavy construction activities such development requires. The only provisions that address soil erosion or the ability of local soils to support wind turbine development, including the construction and maintenance of new or existing roads, are found in Subsection 13 of the Town of Orangeville Zoning 2009. This subsection incorporates standards for protecting agricultural soils when siting wind turbines, for state-wide use, developed by NYS Department of Agriculture and Markets. However, no provisions show any awareness of the predominant soil types in Orangeville and the limitations on their use or disturbance. In fact, the DEIS lists 13 soils not found in Orangeville and does not mention 31 soils that are found in Orangeville.

Studies need to be conducted regarding the physical properties of unconsolidated debris found in Orangeville. Orangeville soils formed as a result of glacial activities during the Wisconsin Period and are grouped as glacial till. Glacial till consists of a mixture of clay, silt, sand, gravel, and boulders ranging widely in size and shape (Dictionary of Geological terms 3rd Edition). The Soil Survey of Wyoming County details soil features that affect highway location. Soils in Orangeville are listed as poor trafficability.

In my professional opinion, informed by my review of the soil survey for the Orangeville area, there are substantial areas in the town within which the kind of land disturbance wind turbine siting requires is not feasible, or should be substantially restricted. The DEIS does not contain protections that address limitations in regards to development of wind turbines in these areas. By failing to address such limitations wind turbine development in the town will significantly affect existing roads and drainage patterns, undermining local roads and putting those who must drive those roads at substantial risk. The DEIS does not incorporate protections adequate for the known soil types that characterize the land in Orangeville. (Submittal 285 – Geoghegan, Heather)

Construction of an Industrial Wind Farm in Orangeville will involve use of roads with slopes greater than 10% and construction on slopes greater than 8% (State of New York Department of Public Works Topographic Maps, 1978). According to the Soil Survey of Wyoming County, New York, a substantial majority of the 66 existing soils in Orangeville are not capable of sustaining such construction activities. (Submittal 285 – Geoghegan, Heather)

Response: As shown by the map provided in FEIS Appendix A.2.g, the proposed Project crosses few areas with slopes of 10% or more. Accuracy of soil listings in the DEIS are discussed in FEIS Section 6.8.4. Ability to install access roads, buried cables, and turbine foundations on Project Area soils is discussed in Sections 6.8.2, 6.8.1, and 6.8.6.

The Project Area is home to a network of public highways and many dirt and gravel roads used by area farmers, and all of these roads — which host many farm construction project vehicles — are constructed on the soils in the Project Area. The proposed access roads will be gravel roads that will carry traffic levels less than the public highways and more than most of the farming access roads. Given that these two types of roads exist without problem in the Project Area, it is reasonable to expect the Project access roads can also be built in the Project Area. Moreover, the mitigation proposed for the Project includes a road agreement with the Town and County that will ensure any damage to public roadways are remediated.

6.8.8 Soils Map (341)

The discussion on soils should include other siting, construction and mitigation considerations, other than for wetlands and agricultural lands. The soils mapping at Figure 3 is not at a sufficient scale to determine individual soil series or soil types at any location. Soils impacts are readily managed through identification of soils characteristics and appropriate scheduling of construction and restoration activities. (Submittal 341 – NYS Dept of Public Service)

Response: FEIS Appendix A.2.c contains a larger map showing soil types and construction impacts areas. As discussed in FEIS Sections 6.8.2, 6.8.6, and 6.8.7, engineering controls such as benching and shoring may be used to provide stability and safety during excavation activities. For road building, suitable sub base materials and geotextile fabrics may be used to ensure that structural integrity is maintained.

6.8.9 Contaminated Soils (341)

Section 3.1.3 - Please indicate methods for screening excavated soils for evidence of contamination and indicate any contaminants of concern based on site and nearby property history. Soils containing evidence of contamination should be handled and stockpiled separately. (Submittal 341 – NYS Dept of Public Service)

Section 3.1.3 - The DEIS describes that excavated soils will be segregated between topsoil and subsoil, and segregated soils will be stockpiled on site separately for reuse as backfill. Please describe protocols/procedures to ensure that soils are suitable for reuse as backfill. Contaminants potentially present in the soils may be mobilized during excavation and soils should be analyzed for 6 NYCRR Part 375 parameters prior to reuse. (Submittal 341 – NYS Dept of Public Service)

Response: The majority of excavations performed as part of Project construction will occur on properties that have historically been used for agriculture or that have been undeveloped woodlots. To check for prior soil contaminations, prior to commencement of construction, Stony Creek will complete a Phase I Environmental Site Assessment (Phase 1 ESA) that will identify Recognized Environmental Conditions (RECs).

When performing excavations in areas where the Phase 1 ESA finds no RECs or other environmental concerns, Stony Creek will field screen soils for contamination using visual indicators and olfactory senses. Stony Creek will train field personnel to identify indicators of soil contamination.

Note that the requirements of 6 NYCRR 375 generally apply to sites undergoing environmental remediation with known contaminants or historical uses that are generally associated with environmental impacts to soil, therefore, based on currently available information, 6 NYCRR 375 does not apply to the Project. But 6 NYCRR 375 does contain standards for analyzing soils and potential contaminants. If Stony Creek must perform excavations in areas where the Phase 1 ESA or other checks indicate soil contamination is likely, Stony Creek will analyze representative soil samples from these areas for potential contaminants in accordance with applicable sections of 6 NYCRR Part 375 (effective 12/14/2006) and DER-10 Technical Guidance (May 2010).

Stony Creek will report, handle, store, and dispose of contaminated soils, if any are encountered, in accordance with NYSDEC and USEPA RCRA regulations, and in consultation with those agencies.

6.8.10 Plastic Sheeting on Soil Stockpiles (341)

Section 3.1.3 - Soil stockpiles should be placed on and covered with plastic sheeting to prevent erosion of sediment into nearby surface waters and mobilization of potential contaminants into the ground surface from precipitation. (Submittal 341 – NYS Dept of Public Service)

Response: Stony Creek will take appropriate measures to prevent erosion of topsoil stockpiles, which does not include the plastic sheeting plan described in the comment. Typically, the most effective measure for stabilizing soil stockpiles is to leave the stockpile uncovered and to seed it, allowing vegetation to stabilize the soil. Silt fencing will be used on the downhill side until the vegetation is established. FEIS Section 6.8.9 discusses handling of contaminated soils, in the event that such soils are encountered. DEIS Section 3.3 and FEIS Section 6.8.10 contain additional discussion of soil stockpile management in accordance with NYSDAM guidance.

6.8.11 SWPPP Version (382)

Stormwater Pollution Prevention Plan (SWPPP) (Appendix B). Prior to construction, the applicant must comply with the most current version of the SPDES General Permit for Stormwater Discharges from Construction Activity and the State's Technical Standards. These technical standards include the 1) New York State Standards and Specifications for Erosion and Sediment Control and 2) New York State Stormwater Management Design Manual. However, the draft plan refers to SPDES General Permit GP-0-08-001 which was the appropriate Permit when the plan was written in 2009. The SPDES General Permit for Stormwater Discharges from Construction activities has since been updated; therefore the final plan must be developed in accordance with the new permit GP-0-10-001.

In addition to proper erosion and sediment control, the final Stormwater Pollution Prevention Plan (SWPPP) must provide design specifications for water quality and quantity controls that conform to the New York State Stormwater Management Design Manual. The Design Manual is currently undergoing revision; therefore it will be the responsibility of the applicant to ensure that the SWPPP is developed in accordance with the most recent version. And any deviations from the Design Manual will be subject to a 60 day review and approval process by the Division of Water.

For your assistance, listed below are the links to the "Construction Stormwater Information" page on the NYSDEC website.

- *The New York Standards and Specifications for Erosion and Sediment Controls aka the "Blue Book", contains the erosion and sediment control practices which are approved by the Department. The "Blue Book" also contains details on the practices, sizing and installation guidelines, phasing recommendations, and other useful guidance for sites which require erosion and sediment controls. This is an essential resource for planning a construction project.*

- *The New York State Stormwater Management Design Manual provides guidance on post-construction control structures which are endorsed by the Department. These structures are designed to control water quality and quantity.*

- *GP-0-10-001 is the most current version of the SPDES General Permit for Stormwater Discharges from Construction Activity. The following links will give you access to each of these documents, as well as other forms which enable a project to apply for permit coverage: GP-0-10-001. http://www.dec.ny.gov/chemical/43133.html*

- *NYS Standards and Specifications for Erosion* and Sediment Controls ("Blue Book") & NYS Stormwater Management Design Manual: ***Error! Hyperlink reference not valid.***http://www.dec.ny.gov/chemical/8694.html (Submittal 382- NYSDEC)

Response: The Lead Agency notes that since the DEIS was submitted, NYSDEC has modified its standards for the SPDES General Permit for Stormwater Discharges from Construction Activity. State regulations require Stony Creek to meet the updated standards.

As required, prior to beginning construction Stony Creek will prepare a SWPPP in accordance with GP-0-10-001, or the regulations that are in effect at that time. This SWPPP will include both construction and post-construction features. Stony Creek will submit its SWPPP, and a Notice of intent, to the NYSDEC. Within 30 days of receipt of the Stony Creek SWPPP, the NYSDEC will review the SWPPP and provide comments to Stony Creek.

6.8.12 Erosion and Spill Prevention (072, 372)

I have two areas to comment on: the technical specifics and the subjective-visual-sound aspects. I have worked for over 20 years as a Facility, Environmental, and Safety Engineer exclusively in the Industrial setting. I have read and reviewed the documentation for the DEIS. There are hundreds of pages to review and it is a long process. However, it was important to me to be able to say that I have read it and the accompanying documentation completely. I critiqued the documentation that is my expertise, waste management, Storm water, SPDES permitting, spill response. I also have extensive experience in the industrial setting with 34.5 primary feeds and transformers, which is the level of electric produced by the wind turbines. I found the documentation in these areas correct and complete. (72 – Beagle, Jill; 372 – Beagle, Jill (verbal))

Response: Comment noted.

6.9 Land Use

6.9.1 Inappropriate Replacement of Farmland; Conflicts (337)

In the name of "green" energy the proposal is to replace a town of productive farmland with access roads to oversized obsolete and exceedingly expensive wind turbines placed within closer proximity to hundreds of non-participating residents than recommended by state and federal regulatory guidelines – with the minimal setbacks decided by elected town board members having conflicts of interest in the turbine issue. (Submittal 337 – Ramsey, Gerald and Donna)

Response: According to land use information in the National Land Cover Database (NCLD), under the FEIS layout, the components of the proposed project will permanently replace approximately 22 acres of agricultural land, or less than one percent of the agricultural land in the Project Area. The Project is sited to minimize impacts, and will preserve agricultural uses by providing additional income to farmers. The Town's Master Plan supports this Project in part because of the twin benefits to agriculture and renewable energy development.

All WTG's proposed for use are state-of-the-art, modern equipment. Proposed setbacks comply with the Town of Orangeville Zoning Code and are discussed further in FEIS Section 6.28. The commenter mentions state and federal regulatory guidelines on wind turbine setbacks, but does not give a specific reference, and the lead agency is not aware of any such guidelines.

Elected and appointed officials for the Town of Orangeville are conducting their review in full compliance with state laws on conflicts of interest. This challenge has also been the subject of litigation brought against the Town, and the State Supreme Court ruled that there were no conflicts of interest in the handling of the proposed project.

6.9.2 Rural Residential Micro-Environments (129)

[Regarding the DEIS Section] "Ecological Communities". The Project Area is predominantly undeveloped and residential rural land dominated by agricultural fields, successional fields and wood lots.

The predominantly undeveloped and residential rural land comments does not go into enough detail in terms of how close residences are to planned wind turbine placements. At best it is vague and lacking factual detail. Those attempting to interpret the accurate situation could make grave errors in judgment. While we certainly have an agriculture community many residences perceive it being developed to the point they prefer it to be. That is why we live here. These wind turbine placements are a threat to home owner's property and micro - environments(s). (Submittal 129 – Orlowski, Joseph)

Response: The minimum setback from residences on lands of non-participating individuals is one quarter mile (1,320 feet), in compliance with the Town of Orangeville Zoning Code. DEIS Map 2 is a large format and detailed map depicting turbine locations, access roads, and residences of nearby participating and non-participating landowners. The Town of Orangeville addresses development planning through a Comprehensive Plan, which is discussed in DEIS Section 3.2.5. Safety, visual impacts, shadow flicker, noise, and property values are discussed in DEIS Sections 3.14, 3.8, 3.7, 3.6, and 3.13, respectively.

6.9.3 Hunting (002, 037, 048, 053, 086, 108, 137, 163, 176, 180, 188, 216, 220, 221, 222, 223, 224, 299, 226, 236)

Will hunters (landowners and those permitted by landowners) be restricted in turbine areas or access roads? Can deer slugs penetrate / damage a tower or blades? (Submittals 002 – Humphrey, Peter; 037 – Hathaway, Derek; 048 – Nevinger, James; 053 – Hopkins, Harold; 086 – Burgio, Michael; 108 – Dylag, M.; 137 – Dickinson, Darryl; 163 – Dickinson, Mary; 176 – Malicki, Richard; 180 – Librock, John; 188 – Gebel, James; 216 – Makson, Linda; 220 – Lagudi, Joseph; 221 – Lagudi, Victoria; 222 – Barrett, M.; 223 – Makson, Alisa; 224 – Makson, Frank; 299 – Ramsey, Gerald; 226 – Nevinger, Michael; 236 – Nevinger, Mary)

Response: Access to these areas will continue to be controlled by the individual landowners. Deer slugs are unlikely to penetrate the steel towers. Although moving rotor blades would make a difficult target, deer slugs could penetrate the rotor blades. Hunting continues unabated around other New York wind farms.

6.9.4 Hunting with Younger Generation (047, 343)

Talking with my 18 year old grandson recently, he said "you know, grandpa, I've been hunting with some high school friends on their parent's property in Wethersfield. You can't listen for the turkey in the woods like you used to because there is too much background noise from the new wind turbines that have been installed on their property."

I don't hunt anymore, but my 90-year-old father spent most of his adult life enjoying hunting this area with his friends and neighbors, Almeters, Glossers, Hermans, Toziers, Fred Burr, Roger Schwedt, and others.

Three of my grandsons have taken an interest in hunting, and seem to really enjoy it. In the world of technical overload I think they truly appreciate the solitude of the woods. If a teenager will spend the night with his grandparents, get up to be in the woods before dawn, and stay out most of the day no matter how cold and miserable the weather is, they must really love the outdoors. You know you could NEVER make a teenager do this! For those of you who hunt the traditional way, be prepared for a very different experience if you have to share the woods with wind turbines!

Is it fair for our generation to make decisions based on "promised" tax reductions and payouts for wind turbines that will change the outdoor experience for us and future generations forever. We had the opportunity to enjoy the beauty and solitude of nature right here in Orangeville, too bad for the grandkids!

Invenergy is proposing to radically alter our outdoor and indoor environment, and no one really knows what the long term effects will be. Can we afford to offer the lives of Orangeville residents as test cases for industrial noise pollution! I think the cost in quality of life may be way too high! (Submittal 047 – Nevinger, James; 343 – Nevinger, James (verbal))

Response: The Stony Creek Project Area consists of 14,483 acres generally surrounding the 52 acres of permanent ground disturbance. The project area constitutes less than 4 percent of the 381,439-acre Wyoming County. Although pristine wilderness conditions no longer persist in the county, large areas suitable for most uses, including hunting, are locally widespread. The Project is compatible with continued outdoor uses including hunting. Economic benefits to rural

landowners will help preserve these open spaces. Deer harvest statistics for Wyoming County are provided in FEIS Section 6.18.4.

6.9.5 Fishing and Boating on Attica Reservoir (110, 111, 112, 113, 114, 115, 116, 117, 118, 192, 193, 194, 195)

There were approximately 135 permits issued to residents of Attica in 2009. These permits are paid by the residence for exclusive rights to fish and boat (non-motorized boating) and enjoy the serenity of nature that exists at the reservoir Is this project going to impede upon the Attica residence to the use of their recreational area? (Submittal 110 – Donohue, James; 111 – Malark, Matthew; 112 – Kibletz, Christopher; 113 – Carrick, George; 114 – Snyder, Allen; 115 – Piontkowski, Ronald; 116 – Dusterhus, Matthew; 117 – Stock, J.; 118 – Piazza, Richard; 192 – Clark, Kevin; 193 – Clark, Shirl; 194 – Bonner, John; 195 – Aprial, Pete)

Response: The presence of the turbines will not affect the recreational use of the reservoir. One turbine is approximately 0.5 miles from the reservoir, and ten turbines are within 1 mile of the reservoir. At least portions of some of these turbines will be obscured from view due to screening provided by topography and vegetation. The DEIS provides visual photosimulations of turbines for this range of distances from the viewer. Figures A3-B of Appendix F is a photosimulation depicting the turbine cluster southeast of the reservoir from a vantage point in the Town of Attica which is closer (0.4 miles) to the turbines than the 0.5 mile distance of the closest turbine to the reservoir. Compared to this photosimulation, the view of these same turbines from the reservoir will be obscured by the greater difference in elevation (the reservoir is 100 feet lower than the viewpoint used in Figure A3-B). Figure A5-B shows the scale of a different cluster of turbines at a comparable (slightly farther) distance (0.6 miles). Figures A8-D, A8-E and A11-B depict turbines at distances starting at approximately 1 mile. FEIS Appendix A.7.e indicates that the noise produced during operation of all 59 turbines at maximum output (assuming use of the 1.60-100 turbines) will be less than 41 dBA at the nearest point of the reservoir.

6.9.6 Project Area; Visual Impacts (340)

The DEIS goes on to assert that "wind development provides rural landowners with a way to diversify income without a significant impact on existing agricultural operations… and provides local municipalities with additional revenue without large-scale changes in land use." However, large-scale changes in land use cannot be avoided by wind development. Elsewhere the DEIS acknowledges that the Stony Creek project area "covers approximately 14,500 acres," over 22 square miles, and its visual impacts will extend at least seven miles beyond the project area. (Submittal 340 – Abraham, Gary)

Response: The permanent footprint (area of ground disturbance) due to project construction will be very small – approximately 52 acres. The 14,483-acre "Project Area" might better be described as a Planning Area, as the boundaries of this area encompass all turbines. Land use will be changed on only a very small minority (less than four tenths of 1 percent) of that area. Only in very unusual situations not expected to occur near Stony Creek would simple visibility of turbines yield a change in the use of the land. Moreover the land uses proposed are specifically supported in the Town Master Plan.

6.10 Agricultural Resources

6.10.1 Lack of Farmers in Orangeville (340)

The DEIS assertion that wind development will allow farmers to diversify income while preserving agricultural uses is undoubtedly correct. However, most residents of Orangeville are not farmers. Whether the Board should approve a project based on financial benefits to a small number of large landowners, at the expense of the visual amenities expected by residential landowners is dubious at best. (Submittal 340 – Abraham, Gary)

Response: In contrast to what is suggested in the comment, the Project Area contains significant agricultural activity, and the preservation of the agricultural economic base will benefit all residents. As discussed in DEIS Section 3.3, 77 parcels comprising 5,349 of the 14,483 total acres in the Project Area are used for agricultural purposes, as classified by the Wyoming County Department of Real Property Services.

Also, DEIS Section 1.1.8 discusses the Project's positive impacts on the local economy, including increased revenues to the Town, County and schools, employment opportunities and purchase of local goods and services. The comment further places a value on visual amenities over rural agricultural preservation on behalf of all residential landowners without any quantifying evidence, and in direct conflict with the Town's Comprehensive Plan.

6.10.2 Applicability to Non-Ag Lands (291)

Appendix B SWPPP: Section 4.1, under Restoration: please clarify whether Stony Creek will apply NYSDAM guidelines apply only to agricultural land, or to all disturbed land. (Submittal 291 – Stantec)

Response: In areas where access roads, WTG sites, and crane pads will be constructed in active agricultural fields, Stony Creek will comply with the New York State Department of Agriculture and Markets ("NYSDAM") Guidelines for Agricultural Mitigation for Wind Power Projects ("NYSDAM Guidelines") and the requirements of Section 1116.B.13 of the Orangeville Town Law. Stony Creek will not apply the NYSDAM Guidelines to disturbed areas that are not in active agricultural use.

6.10.3 Agricultural Mitigation Plan (338)

The Town of Orangeville regulations on Wind Energy requires the preparation of an Agricultural Mitigation Plan. This plan should be prepared and submitted to the Department for review and comment (if necessary) prior to the issuance of the FEIS. (Submittal 338 – NYS Dept of Ag and Markets)

Response: An Agricultural Mitigation Plan for the Project has been provided to NYSDAM, and is provided in FEIS Appendix A.3.e.

6.10.4 Agricultural Post Construction Monitoring Plan (338)

Section 3.3 discussed monitoring and remediation requirements as prescribed by the Department. A detailed post construction monitoring plan should be developed as part of the Agricultural Mitigation Plan to ensure that Department Guidelines are met. This post

construction monitoring plan should be submitted to the Department for review and comment prior to the issuance of the FEIS. The Department's Special Crop Productivity Monitoring Procedures should be utilized in the Development of a Post-Construction Monitoring Plan. This document explains the procedures the agricultural specialist should use to compare crop yields on and off the buried ECS ROW and disturbed/restored vs. undisturbed areas of the Project. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Comment noted. DEIS Section 3.3 states that Stony Creek will consult with NYSDAM or use the NYSDAM "Special Crop Productivity Monitoring Procedures." Procedures for post-construction monitoring are specified in the Agricultural Mitigation Plan provided in FEIS Appendx A.3.e.

6.10.5 Crane Routes (338)

Section 1.4.11 discusses crane assembly and movement. Section 1.2.8.7 describes the track-mounted crane crossing agricultural fields. In such cases, traversing a field is allowed (up to two passes) as long as rutting in excess of 4-inches does not occur. Following the crane walk (pending favorable soil moisture conditions) decompaction and rock picking is required as part of normal agricultural restoration sequencing even if topsoil is not stripped from the crane travel path. (Submittal 338 – NYS Dept of Ag and Markets)

Response: If Stony Creek moves the track-mounted crane (i.e., crane "walks") across active agricultural fields, Stony Creek will not have the crane travel in the same path more than two times, and Stony Creek will conduct such crane walks so that rutting of topsoil does not exceed 4 inches in depth.

As stated in the DEIS and in Section 6.10.2, Stony Creek will comply with the NYSDAM Guidelines and the requirements of Section 1116.B.13 of the Orangeville Town Law regarding protection of agricultural lands, including any required restoration. If a crane is walked over a field in active agricultural use, then it will be treated as a disturbed agricultural area and restored with decompaction and rock-picking as specified in NYSDAM guidelines.

6.10.6 Stormwater Management in Agricultural Fields (338)

Section 1.4.17 describes stormwater permitting requirements associated with a Stormwater Pollution [Protection] Prevention (SWPPP). Appendix B of the DEIS contains a Preliminary SWPPP. The Department recommends that the least intrusive [to normal farming practices] post-construction Stormwater Management Practices (SMPs) be chosen for implementation upon Project completion. The Department recommends that post construction SMPs be designed, sited and constructed in a manner which will have the least interference and/or impact to farm operations as possible. Permanent conversion of agricultural lands to non agricultural use resulting from the implementation of a permanent post-construction SMP should be avoided to the fullest extent practicable. Post-construction SMPs should be constructed as dictated by the terrain to convey stormwater runoff away from roadways and turbine foundations. Culverts, fords, roadside ditches or other stormwater collection and conveyances should not be constructed so as to allow concentrated flow discharges into active agricultural fields. Culverts and other water conveyance structures should be designed and implemented to divert flows away from active agricultural areas into existing or new water conveyance systems (i.e., drainage ditches, grassed waterways, swales, diversion ditches or other appropriate water control structures). Post-construction SMPs such as culverts, swales, and other stormwater

conveyances should be located in areas which will not interfere with normal fanning (cropping) practices. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Comment noted. Stony Creek's stormwater features will follow the recommendations cited by NYSDAM in this section in order to minimize impacts on active agricultural fields to the extent practicable.

6.10.7 Tractor Paths (338)

Section 3.3 of the DEIS discusses the use of existing farm roads for Project access. Farm access lanes, tractor paths or other "unimproved" farm roads other than new roadways constructed for this Project should not be used as off Right-of-way construction access to Project facilities (ie, tree clearing crews or ECS contractor traversing active agricultural lands) without prior implementation of topsoil protection measures. The majority of tractor paths or farm access lanes are located along field edges and are typically utilized infrequently by the farm operator for field access. Unless a proposed construction access route is a well defined farm road (i.e., heavily compacted, no vegetation, gravel or crushed stone surface etc.), topsoil stripping or timber matting shall be required for temporary use. Unless "tractor paths" or "unimproved roads" appear like the farm driveway, they should be treated the same as an agricultural field. Anything that is determined to be a legitimate or clearly defined farm road should be restored to at least original condition. Under no circumstances should the right-of-way clearing crews or electrical contractor be allowed vehicle/equipment access onto or along agricultural fields (including field edges, or unimproved tractor paths) without first stripping the topsoil (or through the use of timber matting). All construction activities in agricultural fields, including equipment and vehicle access for clearing, shall be conducted on topsoil stripped or timber matted travel and work areas. If questions arise as to the designation of, or status of the proposed temporary use of field edges, "proved roads", or "tractor paths" for vehicle and equipment access, the Department shall be notified and the area in question will be field reviewed by Staff and a mutual determination will be made prior to construction. (Submittal 338 – NYS Dept of Ag and Markets)

Response: It is acknowledged that in active agricultural fields, infrequently used "tractor paths" need to be treated differently from well defined farm roads that are compacted, more frequently used, and often located closer to the driveway for the field. However, experience in performing wind farm construction in agricultural areas of upstate New York indicates that such "tractor paths" can be used successfully by tree clearing and cable crews without topsoil stripping if such use is limited, done when conditions are relatively dry, and if such use is coordinated with the landowner. In addition, stripping of topsoil may be more disruptive than limited access over such tractor paths. During construction of the High Sheldon Wind Farm, some landowners specifically requested that construction crews not strip topsoil on farm roads, as such activity could disrupt the landowner's ability to access agricultural fields during construction.

If Stony Creek crews for ECS installation or tree clearing desire to drive on less defined farm roads, i.e., "tractor paths" along field edges, then Stony Creek will only allow such access if conditions would not result in excessive rutting, and if tractor path access is by relatively few vehicles. If conditions are not dry enough to allow tractor path access without excessive rutting, or if tractor path access requirements are significant, Stony Creek will strip and stockpile topsoil

prior to use of the tractor path, and restore the path upon completion. Compliance with the requirements of this paragraph will be reviewable by the on-site environmental monitor.

6.10.8 Trench Breakers (338)

Section 3.3 provides a cursory overview of agricultural protection measures to be implemented during buried electrical cable installation. The Section states that the cable runs will generally follow Project access roads but will also follow field edges and cut directly across fields in places. The proposed layout of the collection system as illustrated on Map 20 of the DEIS does not allow for adequate review of potential impacts to agricultural soils. The Department strongly recommends that in addition to the proposed geotechnical investigation, a thorough soils investigation be conducted along agricultural portions of the buried cable routes by a professional soil scientist. Specifically, Volusia and Mardin soils, having a dense, impervious fragipan, should be identified and field delineated along the proposed cable routes. The reason for doing this is the Project site is dominated by dense glacial till and glacio-lacustrine soils; several of which have a dense vertical flow restrictive fragipan. The Department has observed cases on other commercial wind projects and natural gas pipeline projects in highly glaciated regions of New York State whereby penetration (excavation) into fragipan soils creates a subsurface drainage envelope along the linear expanse of the trench on moderate to sleep slopes unless such flows are alleviated or removed via artificial drainage from the trench. Thermal sand used as bedding further exacerbates this condition.

Trench breakers are typically installed for the dual purpose of preventing trench washouts during construction and abating water piping and "blowouts" subsequent to trench backfilling. In this case, the installation of trench breakers in buried collector line trenches is critical due to the fact that the Project site is dominated by dense glacial till and glacio-lacustrine soils. Penetration (excavation) will create a subsurface drainage envelope along the linear expanse of the trench unless such flows are alleviated or removed via artificial drainage from the trench. Specifically, the Department has observed that when glacial till fragipan is trenched and sandbag trench breakers or 'ditch plugs' are not installed; allowing the factors of: laterally draining fragipan seeps; moderate to steep trench floor gradient; water piping/internal erosion; and sand padding, to interact and create toe of slope water-boils, with the thermal sand or other padding material slowly but steadily transported out with the subsurface trench water at the toe of slope or in a break in surface topography.

Because of this condition described above, the applicant should install trench breakers along moderate to steep slopes in agricultural fields in accordance with the spacing intervals as detailed on the Sample Drawing A-12 "Trench Breaker Spacing" contained in the Department's Standards for Pipeline Right-of-way Construction Projects. Although these Standards were originally developed for natural gas pipeline right-of-way construction activities, the same principles apply to the 'linear' nature of construction associated with buried electrical cable installation in agricultural fields. The Project Applicant shall also record each installed trench breaker location by map referenced station number. In agricultural lands, the top of trench breaker will not be closer than two feet from the restored surface. Additional subsurface drainage may be required following installation of buried electrical collector cables to effectively alleviate wet areas along the buried collector cable right of way and to convey trench water to a stable surface outlet. Electrical collector cable runs will require close monitoring for evidence of seeps, waterboils and other wet areas during the 2-year monitoring period.

Because of the inherent "seepy" fragipan soils present, the Department recommends that trench breakers be installed in the trenches along the buried cable run in identified areas of Mardin and Volusia soils on moderate to steep slopes. The Agricultural inspection staff will need to closely monitor the toe of slope areas in agricultural fields for wet areas or signs of seeps and waterboils in cases where trench water is exfiltrating to the ground surface. If encountered, new interceptor drain lines should be installed in order to alleviate wet areas. The Applicant should make necessary provisions for post-construction drainage repairs in agricultural fields (see #I6 below). Because of potential limitations on slope, topography and other surface features, it may be necessary to install drainage structures and corresponding outlets in locations outside of the Applicant's "permitted" ROW. The Department recommends that the Applicant make necessary arrangements with the Town, other Permitting Agencies and with individual landowners to allow for flexibility to install drainage features outside of the "permitted" ECS ROW. In some cases, drainage easements may be necessary for off-ROW subsurface drain outlets. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Stony Creek concurs that on moderate to steep slopes, the cable trench can collect water and channel it to wet areas at the toe of the slope.

FEIS Appendix A.2.b is an updated map showing more detailed ECS cable routes, including areas of steep slopes that may need to be traversed by the ECS. As the map illustrates, there are very few areas where ECS cables will be installed on significant slopes, minimizing the threat of water buildup and leakage along cable routes in the Project Area.

The NYSDPS has standards for trench breakers for Pipeline Right-of-Way Construction Projects that are depicted on a figure titled Drawing A-12 "Trench Breaker Spacing" which is provided in FEIS Appendix A.2.m. This standard specifies the distance between trench breakers, depending on the steepness of the slope being traversed. To minimize water flow down ECS trenches, if the Project design requires installation of ECS through a corridor whose length is 40 feet or greater and whose average slope is 15% or more, then, Stony Creek will install trench breakers along such cable routes at the intervals specified in Drawing A-12.

As described in the Project's Agricultural Mitigation Plan, for three years following completion of Project construction, Stony Creek will inspect cable runs in agricultural fields for signs of seeps, waterboils and wet areas attributable to Project impacts. If found, Stony Creek will design and implement repairs to restore the drainage to pre-construction conditions, or better.

Measures to maintain regular drainage patterns and to control stormwater are not expected to require construction of new features on properties outside of those under agreement with Stony Creek, thus no special arrangements are expected.

6.10.9 Excavated Rock (338)

On agricultural land, ripped or excavated bedrock, boulders and concentrations of excavated (waste) stone or rock should not be returned to the excavation or trenches any closer than 24 inches from the exposed (subsoil) work surface of the stripped portion of the ECS ROW or other work areas. The remainder of the backfill should be limited to suitable subsoil material, backfilled up to the top of the exposed work surface. Excess waste rock/stone materials should be removed from active agricultural areas. In agricultural areas where the materials excavated during trenching or foundation excavation are insufficient in quantity to meet backfill requirements, the soil of any agricultural land adjacent to the trench and construction zone will not be used as either backfill or surface cover material. Under no circumstances will any topsoil

material be used for ECS cable trench or foundation site backfill. In situations where imported or "borrowed" soil materials are employed for backfill on agricultural lands such material shall be of similar texture to the existing soils on site. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Comment noted. In accordance with the Agricultural Protection Plan, Stony Creek will remove excess waste rock materials from active agricultural areas during cable trenching or foundation excavation. Stony Creek will not return excavated stone or rock closer than 24 inches from the exposed subsoil work surface of the stripped portion of the ECS right-of-way, and Stony Creek will only use topsoil for ECS cable trench or foundation site backfill at depths in which topsoil is normally found. In cases where additional backfill soil must be imported, Stony Creek will use soils of a similar texture to the existing soils on site.

6.10.10 Width of ECS ROW (338)

Section 1.2.7 discusses the proposed Electric Collection System (ECS) which will include 4 circuits or buried cables that will carry power between the WTG and the substation. DEIS Map #20 (Dated Feb. 3, 2010) indicates a 15-foot [width] ECS route [Right-of-Way]. A 15- foot ROW for four buried circuits [run in parallel with min. 8-foot separation] is simply not enough work space required to adequately strip and temporarily segregate [stockpile] topsoil in agricultural fields. Based on the Department's experience with wind farm construction on farmlands throughout New York State, additional temporary workspace will be needed in order to meet the Department's topsoil protection requirements during ECS installation in agricultural fields. (Submittal 338 – NYS Dept of Ag and Markets)

Response: DEIS Section 1.4.7 and FEIS Section 6.4.1 discuss the width required for ECS installation for different methods of cable installation. The updated maps in FEIS Appendix A.2.b shows the number of circuits planned for different parts of the ECS ROW. As shown on these maps, most areas of ECS ROW will contain only one circuit. Thus, the impact width will likely be relatively narrow in the majority of the corridors where ECS cables are installed. As indicated in DEIS Section 1.4.7, in corridors with multiple (up to four) ECS cables installed, the ROW may be up to 50 feet in width.

6.10.11 Topsoil Stripping for ECS Installation (338)

Section 1.4.7 should include a detailed description of how topsoil protection measures will be carried out with each proposed installation method in agricultural fields. In addition, construction drawings should clearly specify the minimum burial depth of four feet in agricultural fields. Although Department Guidelines require topsoil stripping and segregation on more than two parallel circuits installed by trenching, due to the thinness of the topsoil layer, or A-Horizon, the Department strongly recommends that topsoil protection measures be implemented along all buried circuits located in agricultural fields. (Submittal 338 – NYS Dept of Ag and Markets)

Response: FEIS Section 6.4.1 discusses topsoil stripping prior to ECS installation. FEIS Sections 6.4.11 and 6.4.2 discuss ECS cable burial depth. Construction drawings will clearly specify the minimum burial depth of four feet in agricultural fields.

6.10.12 Mulching of Soil Stockpiles (338)

[DEIS] Section 3.3 references erosion control on topsoil stockpiles. The Department clarifies the need for soil stabilization if stockpile seeding is not conducted as a form of soil stabilization.

Topsoil stockpiles should be mulched with small grain straw mulch (not hay) at a rate of 2 to 3 bales per 1000 sq. ft. in accordance with USDA Natural Resources Conservation Service (NRCS) Conservation Practice Standard for Mulching (484). If seeding is not a desired method, other soil stabilization methods include, but are not limited to rolled erosion control fabric or soil tackifiers. (Submittal 338 – NYS Dept of Ag and Markets)

Response: As noted in DEIS Sections 1.4.21 and 3.3, Stony Creek will take appropriate measures to prevent erosion of topsoil stockpiles. Typically, the most effective measure for stabilizing soil stockpiles is to leave the stockpile uncovered and to seed it, allowing vegetation to stabilize the soil. Silt fencing would be installed on the downhill side of stockpiles. Depending on the time of the year, seeding may not be an appropriate mitigation measure, as noted in the comment. If this is the case, Stony Creek will implement alternative erosion control measures such as mulching.

6.10.13 Soil Decompaction (341, 338)

Section 3.3 - Please describe the methods for decompacting temporarily compacted soils upon completion of construction activities. (Submittal 341 – NYS Dept of Public Service)

The last paragraph of Section 1.4.21 discusses post construction agricultural restoration practices. This paragraph should include a sentence about the removal of waste rock uplifted during decompaction. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Stony Creek will decompact impacted agricultural areas by first decompacting the subsoil. Subsoils will be decompacted using a multi-shank subsoiler. This is different from standard chisel plows, as standard chisel plows do not always provide adequate decompaction. Prior to replacing topsoil in an impacted agricultural area, Stony Creek will make multiple passes with the subsoiler. Decompaction will be performed when soil conditions are dry enough to allow for proper shattering of the subsoils, since decompaction will not be effective if conditions are too wet. Following decompaction of the subsoil and prior to topsoil replacement, rocks greater than 4" are picked and removed from the subsoil. Following decompaction and rock picking from the subsoil, Stony Creek will replace the topsoil, pick rocks 4" and greater from the topsoil surface, disc the topsoil, and apply seed. Stony Creek may vary this procedure to match unique conditions or owner requests. FEIS Section 6.10.9 discusses waste rock removal during construction of ECS trenches.

6.10.14 Restoration Details (338)

Section 1.4.14 should include a detailed description of agricultural restoration activities including drain tile repair, decompaction, waste rock (>4" dia.) removal (rock uplifted during decompaction), replacement spreading, landfitting, special soil amendments (lime and fertilizer) and seeding required for final restoration on agricultural lands. (Submittal 338 – NYS Dept of Ag and Markets)

Response: The Project Agricultural Mitigation Plan in FEIS Appendix A.3.e discusses planned restoration activities. DEIS Section 3.3 and FEIS Sections 6.10.19 and 6.10.20 discuss potential impacts on drain tiles and planned repair activities. As noted in these sections, if a drain tile is damaged during Project construction, Stony Creek will repair or re-route drain tiles to allow for proper drainage of the fields.

FEIS Section 6.10.13 and DEIS Sections 1.4.14 and 1.4.21 discuss soil decompaction. Impacted soils in agricultural areas will be decompacted, re-graded to pre-construction contours and reseeded, as necessary.

FEIS Section 6.10.9 and DEIS Section 3.3 discuss removal of waste rock during construction and restoration. Stony Creek will remove waste rock greater than four inches in diameter found during construction and restoration activities in agricultural areas.

Replacement spreading is assumed to be the importing of new topsoil to restore agricultural lands impacted during construction. Stony Creek does not anticipate using replacement spreading as a method of restoration, as stockpile soils should be adequate for grading and landfitting needed to restore drainage to original conditions.

Stony Creek will add fertilizer to seeding when conducting restoration activities, but does not anticipate using other special soil amendments such as lime.

6.10.15 Restoration Schedule (338)

The preliminary construction schedule presented in Section 1.4.1 indicates post construction restoration occurring in April of 2012. While a construction or restoration schedule may be approximated, it is never predictable certainly how soon the soil conditions will be favorable for the scope of heavy-duty restoration work that is essential along the agricultural portions of the proposed Project. The relative precipitation, number of degree days remaining in the growing season; together with corresponding soil moisture and local seasonal level of perched or apparent high water tables, etc., all influence the timing of restoration activities. If construction is completed in late summer or early fall, much of the proposed Project will require topsoil stockpiles to be left in place during the winter months (winterization methods) until the following late spring when agricultural soils are id a more workable (dry, non-plastic) consistency and restoration activities can commence. Post-winterization right-of-way restoration schedules should not be triggered by the local farming's timing of "surface tillage" which, depending on elevation and soil characteristics, final restoration might be satisfactory in late April or perhaps May; but may not be suitable for the deep tillage (decompaction) demands of Project restoration until late May or early June or later.

Agricultural Inspector(s) need to work closely with affected farm operators to help them gain a solid understanding of the agricultural restoration criteria and the need for drier, non-plastic, subsoil consistency before effective restoration activities can occur. Late fall is too late to be conducting restoration activities on agricultural lands. Agricultural restoration is not applied when the exposed right-of-way subsoil and topsoil berm are in a "plastic" state of soil consistence, per the Atterberg field tests. Similarly, site clearing for the facilities proposed on active agricultural land should not commence while soils are in a highly plastic or saturated state. Generally, in strict accordance with Department Guidelines, agricultural restoration activities do not occur between the months of October and May. Depending on the timing of construction and any delays which may occur, farmers may miss the planting season in spring of 2012. Therefore, the Project Applicant should be prepared to compensate for additional crop losses incurred by the farmer due to time delays and or antecedent soil moisture conditions which may inhibit (early) restoration activities. During final restoration, the application of soil amendments and seed shall be in accordance with Department recommendations. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Comment noted. The Lead Agency agrees that many variables can affect the schedule of restoration activities. As described in the DEIS and in the Agricultural Protection Plan, Stony Creek will work with landowners to perform restoration work in a way that is conducive to farming activities. Restoration work will be addressed at the preconstruction meeting with landowners and onsite construction managers will be available through the restoration process to address issues that may arise on a site by site basis. One or more environmental monitors will be present to ensure that restoration incorporates the mitigation measures required by agencies including the Town and NYSDAM. It is very possible that restoration activities will not occur until May. Stony Creek's contracts with landowners contain provisions for crop compensation. Stony Creek's restoration of active agricultural fields will comply with NYSDAM Guidelines and Orangeville Town Law.

6.10.16 Junction Boxes (338)

Pad-mounted junction terminals that are typically utilized to tie buried collector cable "bundles" together into one or more sets of larger feeder conductors have, in several cases, presented a significant unanticipated impediment to field cropping patterns on the High Sheldon Project. The DEIS should include a more detailed justification for the placement of collection system junction boxes in active agricultural fields (if proposed). Because of the potential adverse impacts these junction boxes pose to the viability of farm operations in the project area, the applicant should, to the fullest extent practicable, locate these above ground junction boxes outside of active agricultural areas. Placement of junction boxes in agricultural fields should be avoided to the fullest extent practicable. Information contained in the DEIS does not allow for adequate review of potential impacts (to agricultural lands) associated with junction box locations. The Department requests the ability to review each junction box location within agricultural portions of the project prior to final site design. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Comment noted. An updated map in FEIS Appendix A.2.b shows the location of planned junction boxes. As shown, Stony Creek will locate junction boxes outside of active agricultural fields to the maximum extent practicable.

6.10.17 Mitigation by Soil Type (338)

Paragraph 2 on Page 61 of the DEIS is unclear. Glacial-derived soils tend to be highly variable throughout the expanse of the Allegany Plateau physiographic province, and soil properties can be distinctly different; thus dictating the need for varying soil resource mitigation measures. See #4 above [in FEIS Section 6.10.15] regarding seasonal limitations affecting soil moisture conditions and restoration timing. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Comment noted. Point #4 referenced by the commenter can be found in FEIS Section 6.10.15. The Lead Agency notes that the mitigation and restoration schedule may vary throughout the Project based on different soil conditions and soil properties. Stony Creek will comply with NYSDAM Guidelines and Orangeville Town Law and will consider soil conditions and properties before commencing construction and restoration of Project components located in agricultural areas.

6.10.18 Soils Impacts (338)

[DEIS] Section 3 should include a detailed discussion of temporary and permanent impacts to farmland soils in the "Impacts" section and include a discussion of proposed mitigation measures for the following: WTG construction; Access roads; ECS; Substation, O&M building, and laydown yard; Intersection modifications; Indirect impacts. (Submittal 338 – NYS Dept of Ag and Markets)

Response: DEIS Section 1.4 discusses temporary and permanent impacts to farmland soils, and DEIS Sections 1.4.14, 1.4.21, and 3.3 and the Project Agricultural Mitigation Plan in FEIS Appendix A.3.e discussion restoration and post-construction mitigation activities. As stated in these sections of the DEIS and FEIS, in areas where WTG sites, access roads, ECS cables, substation, O&M building, laydown yard or intersection modifications will occur in active agricultural fields, Stony Creek will comply with NSDAM Guidelines and Orangeville Town Law Section 1116.B.13.

Stony Creek elaborates on impacts associated with specific project components below.

WTG Construction

Table 2 in DEIS Section 1.4.2 outlines temporary and permanent soil impacts due to wind WTG construction. Each turbine will temporarily impact approximately 2.9 acres. After restoration activities, each turbine will permanently impact 0.2 acres, consisting of the turbine pedestal, gravel apron and crane pad. For additional information on WTG worksites, refer to DEIS Section 1.4.4. For additional information on WTG foundation construction, refer to DEIS Section 1.4.5.

Access Roads

Table 2 in DEIS Section 1.4.2 outlines temporary and permanent soil impacts due to access road construction. Access road construction will temporarily disturb an area approximately 40 ft wide per linear foot of road, and permanently disturb an area approximately 20' wide per linear foot of road. DEIS Section 1.4.6 discusses access road construction.

Electrical Collection System ("ECS")

Table 2 in DEIS Section 1.4.2 outlines temporary and permanent soil impacts due to ECS cable installation. Typically, ECS cable installation will temporarily disturb an area approximately 15 ft wide per linear foot of road, but the temporary area of impact will vary based on the method used to install the cable. In any case, ECS cable installation will not permanently disturb agricultural fields. DEIS Section 1.4.7 discusses temporary impacts by method of installation. FEIS Section 6.10.11 discusses topsoil stripping activities prior to ECS cable installation.

Substation

Table 2 in DEIS Section 1.4.2 outlines temporary and permanent soil impacts due to substation construction. Substation construction will temporarily disturb approximately 5 acres and permanently disturb approximately 2 acres. DEIS Section 1.4.8 discusses substation construction.

O&M Building

Table 2 in DEIS Section 1.4.2 outlines temporary and permanent soil impacts due to substation construction. Construction of the O&M building will temporarily disturb approximately 5 acres, and permanently disturb 2 acres. DEIS Section 1.4.13 discusses O&M building construction.

Laydown Yard

Table 2 in DEIS Section 1.4.2 outlines temporary and permanent soil impacts due to the construction of the laydown yard, also known as the construction staging area. The laydown yard will temporarily impact approximately 10 acres, but no permanent impacts are anticipated after the laydown yard is restored. DEIS Section 1.4.3 discusses construction and restoration of the laydown yard.

Intersection Modifications

DEIS Appendix L discusses potential intersection modifications. To the extent that intersection modifications will occur in agricultural areas, Stony Creek will comply with NYSDAM Guidelines and applicable Town Law.

Indirect Impacts

No potential indirect impacts to agricultural soil have been identified.

6.10.19 Fields with Drain Tiles, Access Road Routes (338)

The following site specific comments are based on a review of "Cooperator Files" located in the Wyoming County SWCD office, together with a review of digital orthophotography and site observations from a field review of the Project site conducted on April 8, 2010:

- *Roadway R-2 to Turbine T-04 & 06. The field south R-2 has subsurface drain tile. In addition, the ECS route which crosses a field owned by Glosser located east of Orangeville Center Road, heading to T-09 has subsurface drain tile. The Department recommends routing the ECS route away from known subsurface drain tile locations.*

- *Roadway R-3 to Turbine T-07. The Department recommends that the access road R-3 off of Nesbit Road leading to turbine T-07 should follow the wooded field edge along the northern edge of the farm field. Although this may result in a slightly longer access road length, this suggested layout change will eliminate impacts from dividing this larger field into two smaller fields and eliminate the inadvertent segregation and likely agricultural "abandonment" of the southern portion of the field.*

- *Roadway R-4 to Turbine T-08. The field owned by Duane Harris located northeast of the intersection of Nesbitt and Old Buffalo Roads is comprised of an extensive subsurface drainage network. The Department recommends routing the three proposed buried ECS cable runs along field edges and along the Roadway R-4. This will avoid disturbance to the existing subsurface drainage network in this field.*

- *Roadway R-9 to Turbines T-17 & T-18. An extensive subsurface drain tile network exists in the fields northeast of the intersection of US Route 20-A and Nesbitt Road. The Department recommends routing the ECS route away from known subsurface drain tile locations.*

- *Roadway R-10 to Turbine T-13. Subsurface drain tiles are present along Roadway R-10. In addition, SWCD files revealed the presence of a grassed waterway designed by SWCD Staff located on a field owned by Duane Christ located southeast of the intersection of Krotz and Old Buffalo Roads. The proposed ECS route crosses this SWCD-installed conservation practice near Krotz Road.*

- *Roadway R-11 to Turbine T-19. According to SWCD staff, the landowner has recently installed subsurface drain tile via an independent drain tile contractor. The Department recommends contacting the landowner to determine known and suspected drain tile locations so that the buried ECS cables can be routed accordingly.*

- *Roadway R-16 to Turbine T-24 & 25. A series of three (3) grassed waterways and subsurface drain tiles are located in the field owned by Duane Christ located North of Old Buffalo Road. Two are located north and south of T-25, and one is located along the woodland edge just south of T-24. The Department recommends routing the ECS route away from known subsurface drain tile locations.*

- *Roadway R-15. The Department recommends that this roadway follow the edge of the woods in the vicinity of Turbine T-22. This suggested layout change will eliminate impacts from dividing this larger field into two smaller fields and eliminate the inadvertent segregation and likely agricultural "abandonment" of the southwestern portion of the field. In addition, according to SWCD staff, the landowner has installed subsurface drain tile via an independent drain tile contractor. The Department recommends contacting the landowner to determine known and suspected drain tile locations so that the buried ECS cables can be routed accordingly.*

- *Roadway R-21 to Turbine T-46. Subsurface drain tiles are located in the Shabloski field located southwest of the intersection of Centerline and Poplar Tree Roads. The Department recommends routing the ECS route away from known subsurface drain tile locations.*

- *Roadway R-23 to Turbine T-48. The Project Applicant should utilize the existing farm road located directly across from the entrance to R-21 to access T-48.*

- *Roadway R-25 to Turbine T-51. This access road should be located directly adjacent to the tree edge along the southern end of the pasture.*

- *Lands Owned by Alan West. Farmland northeast of the intersection of Buffalo and Gassman Roads are comprised of a series of drainage-related conservation practices including subsurface drain tiles, grassed waterways, "gravel weeps" and "blind inlets".*

Based on the site-specific information identified above, the Department strongly recommends that the Project Applicant consult with the Wyoming County SWCD and each landowner identified above to determine the presence of subsurface drain tiles and/or other conservation practices implemented on farmlands within the Project area. Technical information gathered from Cooperator files should be incorporated into aspects of Project planning; be utilized for avoidance routing, and be incorporated into final Project designs and construction drawings. The layout of some of the proposed buried ECS routes on active agricultural lands should be re-routed, or "fine-tuned" in order to avoid impacting existing surface and subsurface drainage systems. (Submittal 338 – NYS Dept of Ag and Markets)

Response: FEIS Appendix A.2.n is a map showing the agricultural areas identified in the comment as locations where roads could be re-routed or where the Wyoming County SWCD records indicate contain subsurface drain tiles or grassed waterways. Prior to construction of

Project facilities in the agricultural areas shown in the subject map, Stony Creek will consult landowners to make appropriate adjustments to minimize impacts where practicable.

The comment identifies eight (8) ECS routes that may be crossing fields with drain tiles. As noted in DEIS Section 3.3 and FEIS Section 6.10.20, Stony Creek will repair or re-route any impacted drain tiles to allow for proper drainage of agricultural fields. Please refer to FEIS Section 6.10.20 for a discussion of the drain tile repair plan, and refer to the Project's Agricultural Mitigation Plan provided in FEIS Appendix A.3.e.

The comment recommends Stony Creek re-route the following four roads to minimize impacts to agricultural fields: Road to T-51, Road to T-48, Road to T-22, Road to T-07. The updated layout shown in FEIS Appendix A.2.b factors in these recommendations, including re-routings where it was deemed practicable to do so.

6.10.20 Drain Tile Repair Plan (338)

In addition to re-routing suggestions above, the Department recommends that the Project Applicant develop a comprehensive subsurface drain tile repair plan in consultation with the County Soil & Water Conservation District office. In accordance with Department Guidelines, new subsurface drain lines shall be AASHTO M252 single wall drain line and shall be installed in accordance with the applicable USDA-Natural Resources Conservation Service (NRCS) Conservation Practice Standard for "Subsurface Drain" (606)'. ASTM F405 may not be used in agricultural lands for this drain tile application. Tile outlets shall be constructed of Schedule 80 PVC and steel animal guards should be installed far enough in the pipe to allow it to swivel up and let debris pass without exposing the animal guard beyond the pipe outlet. A "splash rock" should be installed beneath the pipe outlet to dissipate the erosive forces of the discharge water from the drain tile and to prevent scouring from occurring beneath the outlet. Installation of substandard materials may warrant the removal and replacement with the required materials identified above. Department field staff should be notified when existing subsurface drain lines are first encountered during construction and also be notified in advance to witness drain tile repair activities. (Submittal 338 – NYS Dept of Ag and Markets)

Response: As outlined in the Project's Agricultural Mitigation Plan, provided in FEIS Appendix A.3.e, Stony Creek will comply with NYSDAM Guidelines and Orangeville Town Law when restoring any impacts on agricultural fields, as well as land lease obligations

Experience constructing wind energy projects in other agricultural areas is that most landowners have a strong preference on how their drainage systems are designed and installed. If Project construction impacts drain tiles, Stony Creek will consult with each landowner on the methods to design and install drain tile repairs. The on-site environmental monitor will generate regular updates on all drain tiles encountered, and the environmental monitor will be responsible for communicating this information to NYSDAM on a weekly basis.

6.10.21 Ag and Markets Coordination (338)

It is requested that the Project Applicant advises the Department regarding the additional review of items requested above for further review, tentative Project planning, pre-construction meetings and for contractor site walks of the proposed work areas prior to the commencement of construction activities. The Project Applicant is encouraged to continue to closely coordinate with the Department to develop an appropriate schedule for site inspections to assure that the

Department's Guidelines and construction standards are being met. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Stony Creek will consult with NYSDAM prior to commencing construction of the Project. Please refer to the Project's Agricultural Mitigation Plan for more information.

6.10.22 Agricultural Monitor (338)

Several areas of the DEIS discuss construction activities that involve repeated heavy equipment traffic over active agricultural fields which may result in rutting in excess of 4 inches. The Applicant cites three scenarios intended to reduce or eliminate construction related impacts in agricultural fields with high soil moisture (wet) conditions: 1) topsoil stripping, 2) use of heavy timber construction mats, and 3) work stoppage until conditions improve (soil plasticity is dry/workable). While the Department does recognize these scenarios as being viable options for minimizing construction impacts in agricultural fields, qualified field monitoring staff will be required in order to effectively assess field conditions and subsequentlv make those decisions. Decisions on soil plasticity cannot be left up to the contractor or the individual equipment operator. This underscores the importance of having experienced agricultural monitoring staff on site-an individual who is technically capable of making sound decisions based on the Atterberg soil moisture testing and other field conditions. (Submittal 338 – NYS Dept of Ag and Markets)

Section 1.4.20 of the DEIS states that an environmental monitor will be retained to ensure that construction activities are conducted in accordance with applicable regulations and conditions. Due to the significant area of disturbance and agricultural mitigation/restoration activities required as part of this proposed Project, the Department recommends that the Lead Agency require the Applicant to hire an experienced "Agricultural Inspector" to provide onsite monitoring whenever construction and restoration activities are being conducted on agricultural lands. The monitor must possess a working knowledge of agricultural restoration techniques, agricultural resources and be familiar with construction activities. The agricultural monitor will observe for, and report on adherence to Department Guidelines, permit conditions, construction design plans and specifications. The agricultural monitor must also have authority to stop construction activities when a "non-compliance" is observed and to require that immediate corrective action be taken.

Environmental monitors employed on the High Sheldon Wind Project had little to no prior agricultural or agronomic experience required to ensure compliance with Department Guidelines. Competent agro-environmental inspection and supervision of site preparation, construction and restoration activities is fundamental in helping ensure sound implementation and restoration techniques on agricultural lands. Such "Ag"-specific inspection/supervision is critical to a commercial wind energy project due to its concentrations of localized activity, extending over the expanse of the numerous tower sites, access roads and buried ECS routes. To preserve objectivity during compliance inspections, the Department recommends the Project Applicant provide funding for the Lead Agency to hire at least one qualified Agricultural Monitor to oversee construction and restoration activities in agricultural fields. (Submittal 338 – NYS Dept of Ag and Markets)

Response: Comment noted. As discussed in the Project's Agricultural Mitigation Plan, provided in FEIS Appendix A.3.e, Stony Creek will hire a qualified Agricultural Monitor (referred to as an Agricultural Inspector in the comment) to ensure that Stony Creek adheres to NYSDAM

Guidelines and Orangeville Town Law during construction, restoration and post-construction monitoring and restoration activities in active agricultural fields.

6.10.23 General Compatibility with Agribusiness (077)

Windmills seem to go hand in hand with Agribusiness. (Submittal 077 – Compton, Philip)

Response: Comment noted.

6.10.24 Agricultural Tax Breaks (131)

You [the Orangeville Town Board] were elected to represent all residents of Orangeville. I believe you have forgotten this and are only representing the landowners who will be receiving payments from Invenergy for placing turbines on their land. Since these landowners will have industrial wind turbines on their property, they should no longer receive agricultural tax breaks. In my eyes, these are now industrial sites and not agricultural areas. (Submittal 131 – Jensen, Kathleen)

Response: The Agriculture and Markets Department has ruled that land used for wind turbines does not lose its agricultural status for tax purposes. One of the advantages of wind energy is that it complements agricultural uses very well. Farmland in Orangeville will continue to be used as such after the installation and during the operation of the Stony Creek Wind Farm, as is the case at other wind farms in the County. As a result, it is inaccurate to categorize agricultural areas that contain components of the Project as industrial sites.

6.10.25 Clarification: Ag Districts Map (291)

Existing conditions, second paragraph – correct reference from Map 8 to Map 9. (Submittal 291 – Stantec)

Response: Comment noted. The DEIS contained an incorrect map reference.

6.11 Ground Water

6.11.1 Clarification: Watershed Map Reference (291)

Existing conditions, second paragraph - correct reference from Map 12 to Map 13 Include buildings, roads, and ECS (Submittal 291 – Stantec)

Response: Comment noted. The text of the DEIS in this section should have referenced Map 13, rather than Map 12. FEIS map A.2.h provides a revised version of Map 13 that includes the O&M building, substation, met tower, ECS, and access roads.

6.11.2 Nacelle Bedplate Oil Containment (291)

[DEIS] P 65, paragraph 5: our understanding is that GE does not currently certify that the nacelle base provides containment for oil leaks. Please clarify. (Submittal 291 – Stantec)

Response: The gearbox is positioned partway over the nacelle bedplate and partway over the opening in the bedplate for tower access. GE specifications for the nacelle bedplate require that it be able to contain 475 liters (125 gallons) of fluid. If a gearbox leak were to occur, gearbox oil could fall to (i) the nacelle bedplate, (ii) the tower opening in the bedplate, (iii) the small air gap between the tower opening and the nacelle bedplate, or to (iv) some combination of areas described in (i), (ii), and (iii).

Wind turbine manufactures use multiple vendors to supply gearboxes for their turbines. Consequently, individual wind turbines, even if they are the same basic model, could have different gearboxes. Most of the gearboxes used in the GE 1.5 and 1.6 MW turbines contain 260 liters (69 gallons) of oil, but some could hold as much as 380 liters (100 gallons). In the unlikely event that all the oil from a gearbox were to leak completely out of the gearbox, all of the oil could be completely contained by the nacelle bedplate, but depending on the source and nature of the leak, some oil could find its way down the inside or outside of the tower.

6.11.3 Hydro-fracking (286)

Hydraulic fracturing is a method used to create fractures that extend from a borehole into rock formations, which are typically maintained by a proppant a material such as grains of sand or other material which prevent the fractures from closing. The method is normally called fracking or hydro-fracking. (Wikipedia, the free encyclopedia)

The main industrial use of hydraulic fracturing is in stimulating production from oil and gas wells. Hydraulic fracturing is also applied to stimulating groundwater wells, Ml preconditioning rock for caving or inducing rock to cave in mining,12 as a means of enhancing waste remediation processes (usually hydrocarbon waste or spills), to dispose of waste by injection into suitable deep rock formations, and as a method to measure the stress in the earth. Volcanic dikes and sills are examples of natural hydraulic fractures. Hydraulic fracturing and pneumatic jacking was the main means of removal of bedrock for the Dairy Hills Wind Project located in Perry, NY (SDEIS, Dairy Hills Wind Project, Perry, NY). The Stony Creek Wind Farm Project, Town of Orangeville 0does not list methods of removing bedrock from construction site areas.

Hydraulic fracturing fluids contain toxic chemicals and are being injected into and near drinking water supplies. According to the EPA toxic chemicals in fracturing fluids include substances such as polycyclic aromatic hydrocarbons; methanol; formaldehyde; ethylene glycol; glycol ethers; hydrochloric acid; sodium hydroxide; and diesel fuel, which contains benzene, ethylbenzene, toluene, xylene, nephthalene and other chemicals. These chemicals have known negative health effects such as respiratory, neurological and reproductive impacts, impacts on the central nervous system, and cancer.

The Endocrine Disruption Exchange, Inc., (TEDX) has also recently documented health effects of chemicals used in 435 fracturing products. According to TEDX, the top four health effects for chemicals in these products include: skin, eye and sensory organ effects, respiratory effects, gastrointestinal effects, and brain and nervous system effects 12• In addition to being injected into and near water resources, these chemicals are also being trucked through our communities and can spill and leak from trucks, pits, disposal wells, and flow lines. Aside from water contamination, communities are faced with public health threats from chemicals evaporating off drilling sites and residual chemicals that can spill or leak onto our soils.

Hydraulic fracturing during Industrial Turbine Construction in areas of shallow aquifers allows for contamination. Contamination may result from fracturing fluids being stranded underground, some studies available have shown that at least 20-30% of fracturing fluids may remain trapped underground. If wastewater disposal occurs in streams, the chemical make-up or temperature of the wastewater may affect aquatic organisms, and the sheer volume of water being disposed may damage sensitive aquatic ecosystems. Injected fluids have been known to travel as far as 3,000 feet from a well, and fracturing fluids may remain trapped underground15 Additionally, fracturing fluid chemicals and wastewater can leak or spill from injection wells, flowlines, trucks, tanks, or pits. This contamination can be moved off-site through stormwater run-off. Finally, faulty casing, weak cementing, human error and geological unknowns can contribute to contamination from fracturing and other drilling practices.

It is critical for communities and decision makers to understand that hydraulic fracturing fluids not only contain toxic chemicals, but this operation utilizes high volumes of fluids and high pressures to intentionally open up underground pathways for gas or oil to flow. The DEIS does not mention the hazards and contamination citizens of Orangeville and neighboring towns face with use of hydraulic fracturing and pneumatic jacking to their ground water source, streams, creeks, ponds, and wetlands. The DEIS does not safe guard citizens from usage of hydraulic fracturing or pneumatic jacking during Industrial Turbine construction. (Submittal 286 – Geoghegan, Heather)

Response: The Stony Creek Project is a wind energy project that does not involve drilling for natural gas or hydraulic fracking. As stated in the DEIS, bedrock removal will be primarily by mechanical means, supplemented by blasting only if necessary.

6.11.4 Attica Reservoir Watershed (258)

The Attica reservoir is the largest body of surface water that lies adjacent to and in part within the Stony Creek wind farm project area. It is located on the north border of the Town of Orangeville and provides drinking water to the Village of Attica and Alexander. The DEIS speaks about the need for a buffer zone around the reservoir but only indicates that turbines will be

sited greater than 2,660 feet from the reservoir. Many of the proposed turbine sites are within the reservoir watershed. (Submittal 258 – Moultrup, Steven)

Response: The DEIS does not state that a buffer zone is needed to protect the Attica reservoir. The DEIS does state, in Section 3.4.1, that the Project will have no direct impact on the Reservoir because project components are over one half mile from the Reservoir.[59]

As shown in DEIS Map 13 and discussed in DEIS Section 3.4.1, the three Attica reservoirs are located in the Niagara watershed. As shown in DEIS Map 13, 41 of the proposed wind turbines are located in the Niagara watershed. However, most of those turbines are in areas that do not drain into the Attica reservoir. Review of topographic maps (such as DEIS Map 1) indicates that five turbines are proposed for areas that drain toward one of the Attica reservoirs. Table 34 lists these turbines and their distance from the edge of Attica Reservoir #3.

As discussed in the DEIS section 3.4.1 and FEIS sections 6.11.7 location of these turbines in the watershed for the Attica reservoir does not present a significant risk to the reservoir, and risks that may be present will be mitigated by implementation of the Spill Response Plan and the SPCC plan that are provided as DEIS Appendices I.7 and I.8.

Table 34. Turbines in the Watershed of Attica Reservoir #3

Turbine	Distance to Edge of Attica Reservoir #3
T-08	3,220 ft
T-09	2,750 ft
T-20	2,060 ft
T-21	2,750 ft
T-22	3,270 ft

Notes:

1. Turbine ID's and locations are from the FEIS layout.

2. Turbines T-26, T-27, and T-28 are in locations that drain away from Attica reservoir. They are approximately 5,200 ft, 5,000 ft, and 5,400 ft away from the reservoir, respectively.

6.11.5 Clarification: Attica Reservoir in the Project Area (280)

The DEIS Section 3.4.1 Surfacewater, Existing Conditions, under "Attica Reservoirs" (page 64) third bullet item indicates "Reservoir #3 is upstream from Reservoir #2. This is the largest of the three reservoirs and the one closest to the Project Area. Based on our review of the Project Layout, Reservoir #3 is located in the Project Area. Isn't Reservoir #3 located in the Project Area? (Submittal 280 - Core Environmental)

Response: The southern tip of Reservoir #3 is in the Project Area. Thus DEIS Section 3.4.1 could have more accurately stated: "Reservoir #3 is upstream from Reservoir #2 and is the largest of the three reservoirs. The southern tip of Reservoir #3 is in the Project Area, but there are no wind turbines, cables, or access roads planned for locations within one-half mile or less of the edge of Reservoir #3.

[59] DEIS page 65.

6.11.6 Probability of Oil Spills (280, 334)

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

> *Page xxi – each wind turbine will contain approximately 62 gallons of gearbox oil in the nacelle. Chances of oil from the wind turbines impacting water resources are minimal because leaks are infrequent….(Exxon might have said this about the Exxon-Valdez oil spill in Alaska, or perhaps BP about the current fire in the Gulf of Mexico at an offshore drilling platform….Some citizens are skeptical about faith-based statements such as this.)*

There are many more examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

The DEIS Section 3.14.2 Tower Collapse and Blade Failure indicates under "Discussion" (page 158) that three GE built WTGs have failed in the U.S. Two (2) of failures occurred in New York State. A failure of a WTG in the vicinity of the watershed area of the Attica Reservoir could contaminate the drinking water supply of thousands of people. The secondary containment for oil contained in the turbines is of no use in the event of a collapse. The ground mounted transformers contain hundreds of gallons of transformer oil with no means of secondary containment. Core reviewed the New York State Department of Environmental Conservation (NYSDEC) Spills Incidents Search Database. Utilizing the search word "wind' Core identified two (2) active spill reports related to WTGs. The first spill occurred at Fenner Wind Farm in Madison county and involved an unknown amount of transformer oil and the second spill was identified at Windmill Farm in Clinton County involved a 30 gallon spill of hydraulic oil. Have the impacts to the Attica Reservoir #3 as the result of a nearby WTG collapse and possible leakage of oil to the watershed been evaluated and detailed? (Submittal 280 – Core Environmental)

Response: The commenter relies heavily on two NY events, but in neither case did water supply contamination occur. Both of the comments in this section question the probability of leaks or spills occurring and suggest that probabilities for leaks or spills from the Stony Creek Wind Farm should be bolstered by data or explanations from actual wind farms. The discussion below discusses different sources of oil spills or leaks and probability or history of each.

Gearbox Oil Containment

As discussed in FEIS Section 6.11.2, the typical wind turbine gearbox will contain 62 gallons of oil. FEIS Sections 6.11.2, 6.11.15 and 6.11.18 and DEIS Section 3.4.1 discuss possible fluid leaks and containment systems to prevent leaks of gearbox oil. Invenergy operates over 950 GE 1.5sle wind turbines and has experienced one event where a gearbox cracked and oil leaked. In this instance, the oil leaked down the tower was completely contained within the base of the tower. There are no signficant differences in oil capacity of the gearboxes used in the 1.6-100 and the 1.5SLE model wind turbines.

Gearbox Oil Containment in the Event of Tower Collapse

The commenter is correct that a containment system will not prevent oil from leaking into the ground in the event of a total tower collapse. However, the limited amount of oil that would be involved in such a spill, the very low chance of such a collapse occurring, and the fact that Stony

Creek will have an SPCC plan in place that would be used to clean up such a spill, all combine to result in an extremely low risk to the Attica Reservoir.

As discussed in DEIS Section 3.14.2, over 12,000 GE 1.5 MW wind turbines are operating worldwide, and of these five have fallen, representing a turbine collapse rate of one for every 4,338 operating years. Based on this failure rate, the chance of one of the turbines in the Attica reservoir watershed collapsing is 0.09% per year (or a collapse rate of one every 1,084 years). It is reasonable to expect the failure rates for General Electric's 1.x series of wind turbines will not change with the 1.6-100. Foundations will be designed to meet the design loads specified by General Electric.

Hydraulic Fluid

Each wind turbine contains a relatively small quantity of hydraulic fluid (approximately 5 to 10 liters). Invenergy has experienced approximately five failures where hydraulic fluid has leaked from a GE wind turbine. All five failures occurred during construction and commissioning of the wind turbines and on-site crews were able to quickly identify and correct the leaks. No hydraulic fluid leaks have occurred during operation of the wind turbines.

Pad-Mount Transformer Oil

Each wind turbine has an associated pad-mount transformer. The potential for oil to leak from these transformers, the nature of the oil, and mitigation methods to minimize chances of oil leaks are discussed in FEIS Section 6.11.19. The relative low volumes of oil involved, the distances between the transformers and the Reservoir, the regular inspections planned by Stony Creek, and the SPCC Plan to be in place, all combine to result in minimal risk to the Reservoir.

Existing Probability of Oil Contamination of Attica Reservoir (without the Wind Project)

In its current configuration, Attica Reservoir #3 likely has a greater risk from vehicles on nearby roads contaminating its water. NYS Route 238 passes about 1,000 feet to the northeast of the Reservoir. This road sees an average of 1300 cars and trucks pass down it every day.[60] Nesbit road passes approximately 500 feet to the west of the Reservoir; this road probably sees an average daily traffic volume of 100 cars or more.[61] Assuming conservatively each vehicle on these roads carries 5 gallons of oil and 10 gallons of gasoline, in total, this equates to 14,000 gallons of gasoline and 7,000 gallons of motor oil moving every day within 1000 to 500 feet of the Reservoir at relatively high rates of speed every day.

Table 35 compares the risk presented to the reservoir by vehicles and wind turbines.

Table 35. Vehicle and Wind Turbine Risks to Attica Reservoir

Risk Factor	Automobiles	Wind Turbines
Number	1,400 vehicles per day	5
Rate of Speed	20-70 mph	Static
Total Oil Volume	7,000 gallons	<300 gallons
Total Gasoline Volume	14,000 gallons	0
Distance to Edge of Reservoir	500 ft, 1000 ft	2060 ft to 3,270 ft

[60] New York State Department of Transportation.

[61] Assumed.

6.11.7 Attica Reservoir: Worst Case Impact (280)

The DEIS Scope Section 3.4.1 Surface water indicates under "Impacts" it will evaluate "Potential impacts to the Attica Reservoir." However, the DEIS merely states that

> *"Neither Project construction nor operation will directly impact the Attica Reservoir because it is located approximately 1/2 mile away from project components. Indirect impacts by the Project to the waters of the Attica Reservoir will be mitigated by practices to manage and protect Stormwater runoff from area that are directly impacted by Project construction and operation."*

The DEIS does not include potential worse case scenarios (from contamination from silt, oil, waste, etc.), adequate impacts or mitigation. Could you please provide specific characterization of the wind turbine generators (WTG) in the Attica Reservoir #3 watershed, as well impacts, and mitigation other than just stating the distance? (Submittal 280 – Core Environmental)

Response: Probability of oil leaks or spills is addressed in FEIS Section 6.11.6. As discussed in FEIS Section 6.11.11, specific mitigation measures are given in the Spill and Response Plan and the SPCC plan that are DEIS Appendices I.7 and I.8. FEIS Section 6.11.8 considers a scenario that is a very unlikely but possibly worst case event: a turbine collapse and oil spill occurring and not being mitigated before a severe rain storm starts.

6.11.8 Oil Spill During a Storm Event (280)

The DEIS Section 3.4.1 Surfacewater, Existing Conditions, under "Watersheds" (page 63) indicates that the project area is divided into three watersheds. In a regional case this is true, however on a more local level it is important to recognize that the surface water in the project area directly feeds the Attica Reservoir before making its way to the larger Niagara Water Shed Area. To evaluate "Potential impacts to the Attica Reservoir" the DEIS merely states that:

> *"Neither Project construction nor operation will directly impact the Attica Reservoir because it is located approximately 1/2 mile away from project components. Indirect impacts by the Project to the waters of the Attica Reservoir will be mitigated by practices to manage and protect Stormwater runoff from area that are directly impacted by Project construction and operation."*

The DEIS does not evaluate or provide proper mitigation for the potential contamination of the reservoir from a spill of oil, motor fuel, transformer oil, WTG, or WTG transformer.

Orangeville experienced a 24 hour record rainfall (24 hour storm event) of 7.0 inches of rain on July 8, 1998. Shouldn't the DEIS address impacts and mitigation measures that take into account the whole watershed area that discharges surface water to the Attica Reservoir? Couldn't a spill of transformer oil or lube oil from the WTG after a WTG collapse impact the Attica Reservoir, especially if it coincided or was preceded by a storm event such as the 24 hour storm event? (Submittal 280 - Core Environmental)

Response: As discussed in FEIS Section 6.11.4, the DEIS has at most five wind turbines (T-08, T-09, T-20, T-21, and T-22) located in areas that could drain into Attica Reservoir #3. DEIS

Appendices I.7 and I.8 are detailed plans to mitigate and contain risks from spills that could occur from the Project.

Stony Creek will build and operate the Project in accordance with a stormwater management plan that will consider appropriate design level flood events.

The 7.0 inch 24-hour rain event on July 8, 1998 cannot be confirmed by records at nearby cities, but it was possibly an anomaly and or unusual local occurrence that was not captured at weather stations at nearby cities. Historic precipitation records available at www.accuweather.com show that on that day rainfall was 1.31" in Buffalo, NY and 1.35" in Rochester, NY. These rainfalls in Buffalo and Rochester were the highest daily total rainfall over 1998 and 1999. For the entire month of July 1998, total rainfall in Rochester was 4.39".

In Orangeville, NY, the annual average precipitation 38", which is very close to the US average of 37". According to historic rainfall records, high precipitation events are more likely to occur in winter than summer. For a non-winter day, the chance of a rainfall event of more than 1" is approximately 1 in 120 or a 0.8% chance.[62] The statistical probability that a rain event over 1" in 24 hrs would coincide with a worst case release from a turbine is exceedingly small, and certainly not reasonably foreseeable. But even if a release were to occur, all five turbines in question are surrounded by agricultural fields. The topography and surface of the fields would be expected to contain the majority of the spilled oil long enough for response teams to control the spill before oil would reach drainage features leading to the Attica Reservoir.

Appendix G of the SPCC plan prescribes use of barrier socks consisting of oil-absorbent material designed to absorb only the oil or other petroleum product floating on the surface of any surface water present. Therefore, upon immediate detection of the release, placement of barrier socks will prevent oil from migrating from the spill site with any surface water from precipitation or otherwise. In the event of a large release, a secondary-response environmental consultant would be contracted if necessary to sample surface soil and water as applicable for laboratory analysis to identify any areas of suspected environmental impacts in order to delineate any such impacts for mitigation before any contaminants mobilize across the surface or migrate into the subsurface to any significant extent.

6.11.9 Haz Mat Procedures (258)

The primary concern is who will purchase haz mat equipment, who will be trained in its use and where will the equipment be stored for use if a spill or accident were to occur during construction and operation of the wind farm? (Submittal 258 – Moultrup, Steven)

Response: The draft Spill Prevention Control and Countermeasure Plan (SPCC Plan) provided as DEIS Appendix I.8 described so called "Haz Mat" procedures. As stated in the SPCC Plan, Stony Creek will be responsible for implementation of the SPCC Plan, including purchasing of equipment and training of personnel who will implement the procedures in the SPCC Plan. At the site, the Lead Technician or the Site Operations Manager will be responsible for ensuring the plan is correctly implemented. Spill response equipment and materials will be stored at the operations facility in the Project Area. DEIS Appendix I.7 describes spill prevention and response procedures that will apply during construction of the project. Stony Creek will be responsible

[62] Over the ten year period from July 1998 to June 2008, there was one non-winter month (July 1998) out of 120 months with a daily total greater than 1". Months of December through March are assumed to be "winter months."

for purchasing spill response equipment and training construction personnel. Spill response equipment will be stored at the laydown yard.

6.11.10 Attica Reservoir: Justification for No Impact (334)

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

> *Page xx - Neither Project construction nor operation will directly impact the Attica Reservoir because it is located approximately one half mile away from Project components.*

There are many more examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

Response: Justification for this statement is provided in DEIS Section 3.4.1, on page 65. Measures designed to avoid or minimize the potential for direct or indirect effects to Attica Reservoir are described on DEIS pages 65 and 66 and include provisions of the State Pollution Discharge Elimination System Permit (See Stormwater Pollution Prevention Plan - DEIS Appendix B), and a Spill Prevention Control and Countermeasures Plan.

6.11.11 Attica Reservoir: Mitigation of Contamination (110, 111, 112, 113, 114, 115, 116, 117, 118, 192, 193, 194, 195, 377)

What does Stony Creek plan to do if the water (used for the Village of Attica's drinking water) becomes undrinkable due to contamination during the project? (Submittals 110 – Donohue, James; 111 – Malark, Matthew; 112 – Kibletz, Christopher; 113 – Carrick, George; 114 – Snyder, Allen; 115 – Piontkowski, Ronald; 116 – Dusterhus, Matthew; 117 – Stock, J.; 118 – Piazza, Richard; 192 0– Clark, Kevin; 193 – Clark, Shirl; 194 – Bonner, John; 195 – Aprial, Pete)

I live on West Avenue in the Village of Attica, which technically most people would say why that affects me. Five or six wind turbines are going in my watershed. I don't see anything specifically stating in the DEIS or anything else what are they going to do for me, my village, my family if that water becomes contaminated. You're going to set up a FEMA shower for us. I don't know. Am I going to live with someone who is making all that money off the wind mills? I don't know.

That's our water. We pay for it. We go up there. We fish. We're not even allowed to use electric motors on that reservoir, so it doesn't get contaminated. But yet they are going to go up there, dig all around in that muck and tell me that when they are in my watershed, it's not going to effect the water with the flow whether the surface or underground. I want to know what they are going to do for the village if that water becomes contaminated. There's a lot of people and we pay for that water. We live on that water. And nothing is said at all what they are going to do to fix it, compensate, rebuilt it and I'm sure if they did, they will probably want an easement on it anyway like everything else. That's one question. (Submittal 377 – Clark, Shirl (verbal))

Response: As discussed in the DEIS Section 3.4.1 and FEIS section 6.11, given the secondary containment provided by the turbines, construction and testing of transformers, level character and plowed condition of surrounding agricultural lands, regular inspections and continuous

remote monitoring during operation, the location of the turbines in the watershed for the Attica reservoir does not present a significant risk to the reservoir. Residual risks that may be present will be mitigated by implementation of the Spill and Response Plan and the SPCC plan that are provided as DEIS Appendices I.7 and I.8.

6.11.12 Maple Ridge Transformer Leak (284, 381)

There was a point that was made, somebody mentioned about groundwater contamination. I'd like to reference the Watertown Daily News July 4th, 2007, 400 gallons of oil was leaked into an aquifer contaminating all the local wells. Look it up. I would like to see Stantec do a study on groundwater contamination reduction of aquifer flow and recovery rates. That's what I would like to see. I want that study conducted over three years. I want a study prior to construction, during construction and then five years thereafter. That's what I would like to see. I want you to prove to me that you have a plan in place to protect my well from contamination of an explosion with a turbine like what happened in Watertown and also what happened over in Fenner, New York, not too long ago as well. (Submittal 381 – Geoghegan, Heather (verbal))

Lacking regulations for erosion, NYSDEC SPDES permits, and Storm Water Discharge Construction Activity Permit allows for contamination to both surface and groundwater quality. Watertown Daily Times (July 2007) reports "The July 4 explosion at wind farm's substation uphill from the hamlet of Rector Road (NY), --led to 491 GALLONS of oil leaking from damaged transformer, said DEC spokesman Steven W. litwhiler." At that time "a West Martinsburg resident in late November reported the presence of oil in his well water, and tests ultimately determined the contaminate had the same characteristics of the oil used in the electrical transformer ," that exploded. Orangeville's proposed zoning lacks regulations safe guarding surface water and ground water quality and adversely affecting quantity. Therefore it is necessary to incorporate these guidelines within the DEIS. The DEIS does not provide plans to safeguard our drinking waters from such a catastrophe or ways to correct a catastrophe like what occurred in the Hamlet of Rector Road, NY. (Submittal 284 – Geoghegan, Heather)

Response: The Watertown Times reported on December 29, 2007 that the transformer was located in a substation on Rector Road and failed due to an equipment malfunction. The article indicates that 491 gallons were spilled. Additional information was provided to the Lead Agency by Mr. Gary McColluch[63], of NYSDEC's Region 5 office in Watertown, who participated in NYSDEC's response to the spill. According to Mr. McColloch, the spill at Flat Rock resulted from a unique combination of circumstances which are unlikely to be repeated at other sites. The circumstances included:

- construction of a bank of grounding transformers outside of secondary containment at the substation;
- an apparent manufacturing defect which led to arcing inside the transformers and evolution of explosive gasses;
- substation location on a steep (1:2) escarpment approximately 350 feet high, with underlying material composed of fractured shale;

[63] Gary McColluch, NYSDEC Region 5, personal communication, March 29, 2011.

- spill response procedures which resulted in washing contaminants into the soil around the transformer bank.

The chance of a similar leak from the main transformer at the Stony Creek substation contaminating any wells or springs is remote because:

- the main transformer will be installed in a concrete secondary containment that will contain any leaks of transformer oil. There will be no bank of grounding transformers outside secondary containment;
- manufacturing defects of the kind that caused the Flat Rock spill are rare, and if a spill were to occur at the substation, it would be contained;
- the substation is not proposed to be located at an elevated location;
- spill response procedures outlined in the Spill Prevention Report and SPCC call for absorbing, excavating, and disposing of contaminants rather than washing them into the soil.

6.11.13 Orangeville Access to Attica Reservoir (345)

I'm also concerned about the impact on the Attica Reservoir, which I think Town of Orangeville residents should have access to. (Submittal 345 – Hopkins, Harold (verbal))

Response: As discussed in the DEIS and FEIS, location of the turbines in the watershed for the Attica reservoir does not present a significant risk to the reservoir, and minimal risks that may be present will be mitigated by implementation of the Spill and Response Plan and the SPCC plan that are provided as DEIS Appendices I.7 and I.8.

The comment regarding access to the Attica Reservoir system is unclear. Installation of a public water system to provide water from this reservoir to all residents of the Town of Orangeville would be a large scale and expensive project that is outside the scope of this review. Recreational use of the reservoir by Town of Orangeville residents is a topic outside the scope of this FEIS.

6.11.14 Grounding Transformers (291)

Will there be pad mounted grounding transformers in addition to the pad mounts located adjacent to WTGs? If so, they should be included [in the SPCC Plan] if they will contain 55 gallons or more of oil. (Submittal 291 – Stantec)

Response: The Project will include pad-mount transformers at the base of every wind turbine. Separately, each collection system circuit (four to five are planned for Stony Creek) will include either a grounding breaker or a grounding transformer whose purpose will be to quickly ground the collection circuit in the event of a fault. Grounding breakers would be installed in the substation. Grounding transformers would be installed either in the substation or near the base of the first wind turbine on the collection circuit. If grounding transformers are installed, they will have the same size, oil capacity, and oil type as a pad mount transformer and they will be included in the SPCC plan.

6.11.15 SPCC Containment Calculations for Nacelle (280)

The DEIS includes a Draft Spill Prevention Control and Countermeasure (SPCC) plan to describe measures that will be implemented to prevent oil discharges from occurring and prepare to respond in a safe, effective, and timely manner to mitigate the impacts of an oil discharge from the facility. The DSPCC Section 3.5 Containment and Diversionary Structures (page 8) indicates that:

> *"The wind turbines have an inner oil containment system built into the tower. The wind turbine nacelles have a containment volume of approximately 25 gallons. Additionally, a containment trough or catch ring with a containment capacity of approximately 25 gallons runs around the tower just below the yaw deck. Leakage of yaw gear oil will first flow into the containment trough and then would flow down the inner tower support to the basement which can contain approximately 300 gallons."*

Should Appendix I to the DSPCC include the dimensions of the secondary containment described in the text? (Submittal 280 – Core Environmental)

Response: The SPCC Plan provided in the DEIS is a draft plan that shows the type of information and detail that will be included in a final SPCC Plan; it provides the necessary information to analyze the risks and related mitigation applicable to this Project. The final SPCC plan will be developed with calculations of the secondary containment volumes that will use the dimensions of the turbines that are installed and will be in accordance with NYSDEC and SPCC requirements.

6.11.16 SPCC Containment Calculations for Main Transformer (280)

The DSPCC indicates that:

> *"The transformer at the substation is built with a concrete dike that has sufficient capacity to contain the transformer oil released from the substation step-up transformer plus rainfall from a 24-hour, 25-year storm event."*

Should Appendix I to the DSPCC include the dimensions of the secondary containment described in the text and include the capacity to contain the oil as well as the amount of rainfall that Orangeville received on July 8, 1998 (7.0 inches)? (Submittal 280 – Core Environmental)

Response: The SPCC Plan provided in the DEIS is a draft plan that shows the type of information and detail that will be included in a final SPCC Plan; it provides the necessary information to analyze the risks and related mitigation applicable to this Project. The final SPCC plan will be developed with calculations of the containment volumes for the main transformer that are based on the volumes of fluid in the transformer and the appropriate rainfall amounts based on historical records and will be in accordance with NYSDEC and SPCC requirements.

6.11.17 Inspection of Containment for Main Transformer (291)

How often/under what conditions (storm events) will the secondary containment for the main transformer be inspected for presence of stormwater (in order to prevent loss of available containment volume)? (Submittal 291 – Stantec)

Response: Stony Creek will inspect the secondary containment for the main transformer after rainfall events of 2 inches of rain or more over a 24 hour period. If during such inspections Stony Creek finds the available containment volume is less than required to contain an oil leak from the transformer, then Stony Creek will drain the water in the containment to a level where there is sufficient volume available to contain an oil leak from the transformer.

6.11.18 Containment in the Tower Foundation (291)

Will the floor of the WTG tower be curbed and/or sloped to contain oil? (Submittal 291 – Stantec)

Response: Yes. The top of the foundation pedestal (the floor inside the tower base) will have a sump area at the center and will be sloped from the outer edges toward the center sump. With this design, any oil or hydraulic fluid that leaks down the tower will be collected in the sump. The outer edge of the pedestal base / floor is ringed by the grout that fills the gap between the concrete pedestal and the steel tower flange.

6.11.19 Containment at Pad-Mount Transformers (280)

The DSPCC also indicates that:

> *"Secondary containment for the padmount transformers located at the towers is impracticable because the transformers and turbines are not readily accessible year round. The transformers and turbines are located over an approximately 14,500-acre Project Area. Land-based spill response equipment (e.g., sorbents, booms, etc.) and a spill response contractor (T8D) with a response time of approximately 4-6 hours are used to prevent oil from reaching navigable waters."*

Doesn't the large project area, lack of accessibility, and infrequent inspections (Quarterly or every 3 months) necessitate the use of secondary containment?

Couldn't a spill from a WTG transformer could go unnoticed for up to 3 months and with a rain event travel far and potentially contaminate surface waters, or an aquifer? Isn't' the lack of accessibility of the WTGs is an invalid statement since the WTG sites are readily accessible by tractor trailers, trucks and cranes during construction, but after complete are somehow inaccessible?

The DSPCC Section 3.6 Practicability of Secondary Containment indicates that "management has determined that providing secondary containment for the grounding transformers and the padmount transformers located at each wind turbine is not practicable at this facility due to the electrical nature of the transformers and remote location." How is secondary containment for oil filled transformers affected by the electrical nature of the transformers? Are there are a number of options for providing secondary containment to oil filled transformers that would contain a spill and keep it from impacting the environment? Since the grounding transformers are at remote locations, wouldn't secondary containment provide the best management practice for containing a release? (Submittal 280 – Core Environmental)

Response: Because leaks in the pad-mount transformers are not expected and because measures are in place to detect and respond to spills if they occur, Stony Creek does not intend to use secondary containment. The transformers contain approximately 575 gallons of clear mineral oil. Note that mineral oil is essentially the same material used as baby oil, as a laxative, and to remove makeup. A Material Safety Data Sheet for the mineral oil used in pad-mount transformers is provided in FEIS Appendix B.e.

In a pad-mount transformer, the mineral oil is contained in a tank and cooling fins that are integrated into the pad-mount transformer. Any oil leak would most likely be a slow leak at either the welded seams of the tank, or in the bushings where the power cables enter the tank. A catastrophic failure is highly unlikely.

To ensure integrity of the pad-mount transformers, prior to the Project beginning commercial operations, Stony Creek will complete an infra-red or equivalent survey at 100% of the pad-mount transformers. Additionally, as part of every regular scheduled wind turbine maintenance, Stony Creek will visually inspect the pad-mount transformers, and the ground around the pad-mount transformer to identify any leaks.

If any leaks are identified in pad-mount transformers, Stony Creek will take prompt measures to prevent the leak from contaminating soil under the transformer, including possibly replacing or repairing the transformer.

During operations, the ECS would provide the operators indications of a leaking transformer. If a leak were to develop in a pad-mount transformer, it would affect performance of the transformer and cause the circuit breaker for that ECS circuit to trip open. The open circuit breaker would alert Stony Creek to a problem in the ECS circuit such as a pad-mount transformer with a low oil level.

Thus, because leak detection systems will be in place (automatic detections by the ECS and regular visual inspections) and because leaks in the pad-mount transformers are not expected, the risk of an oil leak is low, and secondary containments are not warranted.

6.11.20 SPCC Plan Requirement (382)

Spill Prevention, Control, and Countermeasures Plan (SPCC) (Appendix I, Section 7&8). Due to possible construction impacts from heavy equipment use (such as large cranes) and the need to move much soil and concrete over rugged terrain, hydraulic and diesel fuel spills are a distinct possibility. And during operation, spills are also a possibility due to the number of wind turbine generators and large electrical transformers. An acceptable Spill Prevention, Control and Countermeasures Plan will be required for any permit issued by the DEC. Proper measures to prevent, contain, and cleanup spills are a critical component of the Permitting process. Also, measures must be in place to ensure that drinking water supplies, to include groundwater and surface water sources, are protected. (Submittal 382 – NYSDEC)

Response: The comment explains the permitting requirements in place to protect water quality and Stony Creek will be required to comply with these requirements. A draft Spill Prevention Control and Countermeasures Plan for the Project is provided as DEIS Appendix I.8. The FEIS and DEIS have considered many comments and concerns related to drinking water supplies, and based on evaluation of these comments and concerns and the mitigations identified herein, the Project will not present a significant risk to drinking water supplies.

6.11.21 SWPPP – Stormwater Runoff Affecting Watersheds (287)

Orangeville plays an intricate roll in 4 watershed districts. Streams, wetlands, and ponds contribute to the Tonawanda Creek, East Koy Creek, Oatka Creek and the Attica Reservoir. Changes in the flows of these contributing freshwater sources will affect 4 water shed districts, roadways, dwellings, farm fields, and pasturelands. Orangeville also plays a role in the recharge of the Cattaraugus Reserve.

There are no restrictions for industrial wind turbine construction within the Town of Orangeville near a watershed district or freshwater surface water. Emphasis and guidelines need to be established in the DEIS. There are limited provisions to prevent soil runoff, drainage flows, and sedimentation, at construction sites for wind turbines. There are no provisions for runoff pollution during the construction phase or maintenance of wind turbines. There are only provisions addressing soil erosion or ability of the local soils to support wind turbine development, including the concluding construction and maintenance of new or existing roads, are found in Subsection 13 of the Town of Orangeville zoning Laws. This subsection incorporates standards for protecting agricultural soils when siting wind turbines, for state-wide use, developed by NYS Department of Agriculture and Markets. However, no provisions show awareness of the watershed district tributaries and Attica Reservoir. There are no limitations on their use or disturbance to them.

The DEIS does not site all drainage basins and drainage patterns. The DEIS needs to list means to safe guard individuals from possible flooding due to wind turbine construction, or wind turbine access road construction. The soils in Orangeville are recorded to have seasonal high water tables, high erosionability, poor trafficability, and in many cases poor strength (Wyoming County Soil Survey). Because current zoning does not mention ways to safe guard these contributing water sources to water shed districts residents will experience increased rates in flooding, and are in danger of construction site pollution runoff, the DEIS lacks methods to protect these citizens from these factors. The Genesee & Wyoming Counties Joint Flood Mitigation Plan, Town of Orangeville (G/FLRPC) (August 2003) references the significance of the slopes found in Orangeville. ln July 1998 bands of severe rain moved over the towns of Sheldon and Orangeville in Wyoming County, dumping up to 7 inches of rain within a 24-hour period. These towns suffered significant flood damage, the steep slopes and high stream gradient caused the water to quickly drain northward down the Tonawanda Valley. The DEIS states that there are no significant slopes in Orangeville. The DEIS needs to accurately list the gradients present in Orangeville and the slopes where Industrial Turbine Construction will occur.

Disturbances in drainage flow and surface water runoff will enhance erosion and sediment flows in a town which has experienced the 10 year, 25 year, 50 year and 100 year flood in the past 10 years. Many roads have been washed out numerous times (all attributing to significant weather patterns). Implementation of poorly sited wind turbine access roads, and wind turbines could promote more flooding occurrences and road wash outs.

The Star Gazette December 03, 2007, reported concerns regarding wind farm runoff risks. The primary concern was construction runoff pollution introduction into the Cayuga Lake. The Attica Reservoir is present in Orangeville and is the municipal water source for the Attica Penitentiary and the Village of Attica. Other contributing freshwater sources to the Oatka Creek watershed, East Koy Creek watershed, the Tonawanda Creek watershed, as wells as the Cattaraugus Reserve are endanger of construction runoff pollution. Construction runoff pollution is storm water that

flows over a construction site picking up soil, chemicals, and debris. This runoff then travels into freshwater resources. "According to the New York State Energy Research and Development Authority's publication "Wind Project Lifecycle Overview," the construction phase of the wind farm can take from 5 to 18 months."

In my professional opinion, informed by my review of the soil survey for the Orangeville area, field studies, and research there are substantial areas in the town where the land disturbance industrial wind turbine siting requires is not feasible, or should be substantially restricted. The DEIS does not and needs to incorporate protections adequate for the known drainage basins, one reservoir, unconfined aquifer and contributing water sources for the 4 water shed districts that exist within the town. (Submittal 287 – Geoghegan, Heather)

Response: The commenter correctly notes that the DEIS "does not [c]ite all drainage basins and drainage patterns." Erosion controls during construction will be based upon site specific topography in accordance with NYSDEC requirements, regardless of drainage basin. The DEIS correctly notes erosion controls will be employed.

Although the commenter states that wind turbine siting "should be substantially restricted" the commenter does not provide specifics as to the "substantial areas" in the town to be restricted. This makes the comment difficult to specifically address, nor does the commenter suggest any impacts that would not be prevented by regularly employed controls.

For example, runoff pollution cited by the commenter is stormwater that would interact with a construction site and then reach a water supply. This type of potential pollution is strictly regulated by the terms of the NYSDEC SPDES General Permit for Stormwater Discharges for Construction Activity (GP-0-10-001). A draft SWPPP was included in the DEIS; it fully demonstrates the devices and procedures that will be employed to prevent possible. The Final SWPPP will include various methods, including but not limited to fabric on exposed slopes and reseeding of finished areas, to ensure surface water is not impacted by either sedimentation or other construction discharges. The final SWPPP will be based on the final layout which will not be approved until the EIS Findings are complete.

There is no information supporting the concern that the construction of the turbines and roads will increase flooding in the area. The DEIS estimates the proposed project will permanently increase the impervious area of the town by 52 acres of the 14,483 acres in the project area – less than 1% of the Project Area. This topic is also discussed in FEIS Section 6.11.22.

The commenter also notes concern over the construction of the Project relative to the tributaries to the Attica reservoir. As shown in the DEIS, the Project will cross one tributary to the Attica reservoir (installation of ECS) that will have minimal surface impact during construction.

The commenter also states "because current zoning does not mention ways to safe guard these contributing water sources to watershed districts residents will experience increased rates in flooding." As shown on DEIS Map 13, the entire Project Area is part of one of three watersheds. The term "watershed district" is not clear. The specific concerns regarding construction in a watershed are unclear. As stated above the SWPPP will limit impacts during construction and the increase in impervious area is less than 1% of the Project Area. There is no evidence presented supporting the assertion of increased flooding.

The comment inaccurately asserts that the DEIS states there are no steep slopes in Orangeville. DEIS Map 12 depicts slopes greater than 15% and the locations of WTGs. It is therefore easy to determine the proximity of steep slopes and WTGs. Impacts to steep slopes total approximately 1 acre, and these impacts are limited to underground ECS installation. ECS installations for the FEIS layout would result in approximately 0.9 acres of impact in areas where slopes are greater than 15%. This does not account for directional boring installations, which would likely be done in some of these areas and would reduce this impact area. Access road installations for the FEIS layout would result in approximately 0.8 acres of impacts in areas where slopes are greater than 15%.

6.11.22 Flooding of Local Creeks (335)

Due to the significant size of this project and the potential impact to the adjacent streams, the DEIS should address the potential to increase flooding problems in the affected watersheds. A couple examples of this are the Oatka and Tonawanda Creeks water sheds to which the proposed project would drain to. Both of these creeks exhibit flooding now. While for typical development projects the standard is to limit stormwater discharge rates for the 10 and 100 year storm event to the pre-developed rates, with the extreme amount of sites proposed, standard detention practices will likely not provide adequate protection for the receiving streams, road site ditches and road culverts. Using standard detention practices may limit the peak discharge rate from a site, but it increases the duration that the area discharges that rate. Due to the changes in times of concentration, this can create situations where peak discharges from multiple sites overlap. This could, and like will have negative impacts on the receiving watersheds, receiving streams, drainage paths across agricultural lands (leading to greater potential for soil erosion), road side ditches, culverts and flood plains.

While some may not view stone or gravel roads as an impervious surface, it has been shown, and they are considered by the New York State Department of Environmental Conservation (NYSDEC) to be impervious surfaces. Due to the amount of impervious area being proposed, the DEIS should address the impacts of the proposed increase in stormwater runoff (in both a site by site basis and the overall project basis) to the impacted watersheds. This will likely include a HEC-RAS analysis of Oatka creek's flood plain in Warsaw and Tonawanda Creek's flood plain in Attica and the surrounding areas to make sure that there is not a negative impact to the flood plain elevations. (Submittal 335 – Anonymous)

Response: Of the approximately 14,483 acres in the project area, only approximately 52 acres will be covered with new impervious surface. This minor increase in impervious surface will not significantly increase runoff. The estimate of 52 impacted acres includes gravel roads, and thus when the 52 impacted acres are discussed in this section, the gravel roads are being assumed to be impermeable surfaces. Where practicable, access roads will follow existing farm roads, which also have an existing low permeability. Thus, the estimate of 52 acres of new impermeable surface is likely a conservative calculation, as the farm roads being replaced are already relatively impermeable.

The Project will include storm water conveyances to shed water to heavily vegetated areas and check dams and stone basins to diffuse velocity, but because a small percentage of the Project Area will be converted to impervious or low permeability surfaces, and because the Project will comply with NYSDEC regulations regarding stormwater runoff, there is no reason to assume that there will be an increase in flooding of local creeks.

6.11.23 Version of NYSDEC Permit Used in Draft SWPPP (335)

The SWPPP is inaccurate and references outdated regulations and would be in violation of the permit that it references anyway. Wind farms are subject the same SWPPP regulations as any other development and even under the old permit that it is referencing, this project would be required to provide Water Quality and Quantity Treatments. Under the current regulations, these requirements are even more stringent. The DEIS should be revised to be accurate and show exhibit designs to all new regulations and those that will be in effect when the project, if allowed, would be constructed. (Submittal 335 – Anonymous)

Response: As stated in FEIS Section 6.8.11, the SWPPP that was included with the DEIS was prepared according to the regulations of GP-0-08-001. These regulations have been updated to GP-0-10-001. The Project Sponsor will develop and submit a SWPPP to the NYSDEC in accordance with those regulations prior to beginning construction.

6.11.24 Vehicle Washdowns in NYSDEC Wetlands (341)

Section 3.5.6 – Please describe erosion and sediment control measures anticipated for preventing degradation of water quality during removal of dirt and debris from equipment used in NYSDEC regulated areas. (Submittal 341 – NYS Dept of Public Service)

Response: Silt fence and or hay bales will be installed immediately down-gradient of the washing station as described in DEIS Appendix B. Wash stations will be located in upland areas with relatively flat terrain.

6.11.25 Aquifers (058, 282, 357, 284, 285, 337)

Under the present zoning regulations for wind turbine development in the Town of Orangeville, there is no mention to safeguarding surface water and groundwater quality and quantity. Many creeks, streams, wetlands, and a Reservoir exist in Orangeville. These freshwater sources drain into 4 watershed basins. There are seven wetlands located in Orangeville as reported on the USDA wetlands delineation map (USDA Office, Warsaw, NY). There are only provisions addressing soil erosion or ability of the local soils to support wind turbine development, addressing the construction and maintenance of new or existing roads, found in Subsection 13. This subsection incorporates standards for protecting agricultural soils when citing wind turbines, for state-wide use, developed by NYS Department of Agriculture and Markets. However, no provisions show awareness of the watershed districts, tributaries, wetlands, and Attica Reservoir. There are no limitations on their use or disturbance. (Submittal 284 – Geoghegan, Heather)

The current zoning does not address erosion control, sedimentation, de-watering activities, and spill prevention. Requirements to minimize erosion should minimize the potential adverse impacts on wetlands, Class I and Class II streams and the banks and the vegetation along those streams and wetlands were erosion and sedimentation would occur. Requirements to minimize these activities will assist in protecting surface water and ground water quantity and quality. The current zoning does not mention the need for the applicant to comply with the New York State Department of Environmental Conservation (NYSDEC) SPDES general permit for Storm water Discharges from Construction Activity (Permit No. GP-02-Q1). Current zoning also does not request Notice of Intent (N.O.I.) and Storm Water Pollution Presentation Plan (SWPP), which is required by the general permit and should be on file with the Town prior to construction. Current

zoning should state that the construction of a wind turbine cannot begin until the required time period for NYSDEC review has passed. The DEIS is incomplete, lacks studies, and does not list all aquifers found in the Project Area. The DEIS does not mention the Cattaraugus water reserve which is 1 of 14 water reserves found in New York State. The project area also mentions that the Attica Reservoir is a Class A Water Way and is a Sole Source Aquifer. The DEIS does not provide validation to their statement found on page 6-1 "project will not impair water quality". The DEIS needs to provide verification as to this statement and prove that their proposed project Stony Creek Wind Farm, will not cause disturbance to quality and quantity of ground water and or surface water. (Submittal 284 – Geoghegan, Heather)

In my professional opinion, informed by my review of the soil survey for the Orangeville area, field studies, and research there are substantial areas in the town where the land disturbance wind turbine citing requires is not feasible, or should be substantially restricted. The DEIS does not safeguard and protect these "sole source aquifers". By failing to address such limitations it is likely that wind turbine development in the town will significantly affect surface water and ground water quantity and quality not only for citizens of Orangeville but also those who use the Varysburg well, and all recipients of water from the Attica Reservoir and the Cattaraugus Water Reserve. (Submittal 284 – Geoghegan, Heather)

STANTEC doesn't even mention the Sheldon/Varysburg well. Stantec also forgets to mention that YES this proposed project is located within a sole source aquifer. And over a primary principle sole source aquifer. (Submittals 058 – Geoghegan, Heather; 282 – Geoghegan, Heather; 357 – Geoghegan, Heather (verbal))

Project will risk changes to underground aquifers that supply well water to residents. (Submittal 337 – Ramsey, Gerald and Donna)

In fact the mention of well-head protection zones is not great enough to protect residential citizens within Orangeville. The Safe Drinking Water Act of 1974 (P.L. 93-523) was passed to set standards for safe drinking water and protect "sole source" aquifers, and protect drinking water aquifers. The 1986 "Gonzales Amendment" authorizes the EPA (Environmental Protection Agency) to designate aquifers that are especially valuable because they are the only source of drinking water in an area. No federal financial assistance may be given to a project that might contaminate one of these "sole source" aquifers so as to create a significant hazard to public health (Fetter, C.W. 1994, Applied Hydrogeology, 3rd Edition). The Attica Reservoir is a "sole source" aquifer for the Attica Penitentiary and the Village of Attica, this reservoir is in Orangeville. In fact, turbine clusters T-07, T-08, T-20, T-21, T-22, T-26, T-27, T28, T-24, and T-25 are all within a mile of this "sole source aquifer". Industrial Wind Turbines T-20, T-21 and T-22 are within 3,000 to 3,500 feet of the Attica reservoir. Streams and swamps found in Orangeville drain into this reservoir. The Hamlet of Varysburg has a sole source aquifer at the bottom of Buffalo Hill Rd within 1/8 mile of the Orangeville-Sheldon Town line-the Varysburg holding tank is located in Orangeville. This sole source aquifer is within one mile of the T-1, T-2, and T-3 wind turbine cluster. Buffalo (Hill) Road has slopes that exceed 10% and springs on this hill recharge the Varysburg well. The DEIS does not mention that there are four holding tanks shown on the US Department of Interior Geological Survey for the Attica Quadrangle for Orangeville. The Unconfined Aquifer shown on the lower south east corner of Map 13 (Invenergy DEIS) is a recharge area for the Cattaraugus Water Reserve; the DEIS does not mention this. This DEIS does not provide studies for the aquifers found in Orangeville and does not provide proof verifying

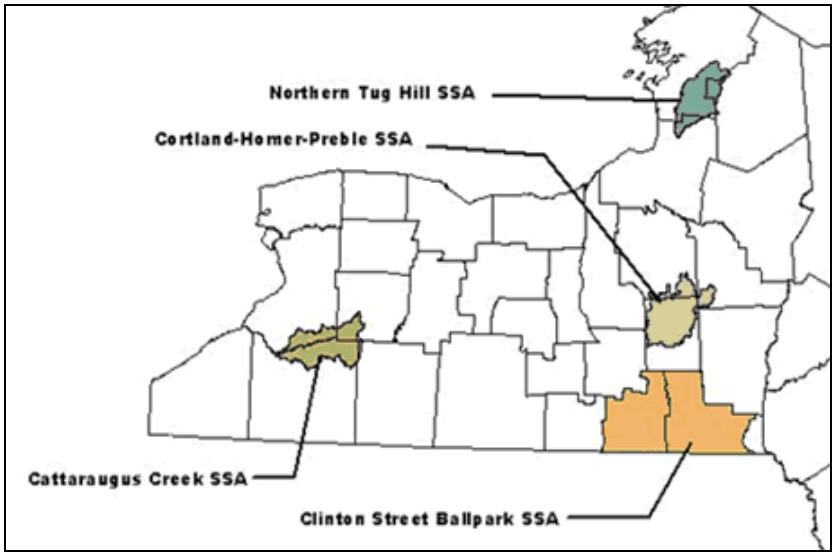
that this Project will not damage, destroy or impede on all aquifers found in Orangeville. (Submittal 285 – Geoghegan, Heather)

Response: The comments correctly note that the local zoning code does not include certain requirements of other permits applicable to the Project; that is largely because the concerns referenced are not zoning issues. Rather, the zoning code requires full compliance with other permitting regulations and SEQRA, which requires taking a hard look at legitimate environmental concerns. While the specific content of the local zoning ordinance, and any purported need for revision of the ordinance, is outside the scope of this EIS, the review of this Project has considered environmental impacts including potential impacts from erosion, from sedimentation, to drinking water supplies, and to wetlands, all of which are evaluated in the DEIS and FEIS.

Sole Source Aquifers

The USEPA designates sole-source aquifers (SSA). The EPA defines a sole or principal source aquifer as one which supplies at least fifty percent (50%) of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as "sole source aquifers."[64]

Figure 10 shows the location of sole SSA's in Western NY.[65] As shown in the figure, no SSA's exist in the Project Area. The closest SSA to the Project Area is the Cattaraugus Creek Basin SSA, which is located in Cattaraugus, Erie, Allegany, and southwestern Wyoming County. The Cattaraugus SSA is no closer than approximately 3 miles from the Project Area. The SSA supports the Town of Arcade, located approximately 14 miles southwest of the Project Area.



[64] see http://www.epa.gov/region2/water/aquifer/

[65] Original SSA graphic available at http://www.epa.gov/region02/water/aquifer/

Figure 10. Sole Source Aquifers in Western New York

Primary Water Supply Aquifers

The New York Department of Health has identified 18 "Primary Water Supply Aquifers" in New York State. These aquifers are "highly productive aquifers presently utilized as sources of water supply by major municipal water supply systems."[66]

No Primary Aquifers exist in the Project Area. The closest Primary Aquifer to the Project Area is the Tonawanda Aquifer. The southern tip of this aquifer is north of the Project Area at the Wyoming-Genesee County line.

Principal Aquifers

A second category used by the New York Department of Health is "Principal Aquifers," which are "aquifers known to be highly productive or whose geology suggests abundant potential water supply, but which are not intensively used as sources of water supply by major municipal systems at the present time."

One Principal Aquifer exists in the Project Area. This aquifer is correctly depicted in DEIS Map 14 as an "unconfined aquifer" in the southeastern portion of the Project Area. No WTGs are proposed within the boundaries of this principal source aquifer. A portion of one access road and one buried cable, however, are proposed for areas off of Quakertown Road that are above this aquifer. This ground disturbance, however, is expected to have minimal or zero impact on the aquifer because of the small percentage of area impacted and the relatively shallow nature of the ground disturbances involved.

Water Reserves

Information from the Department of Environmental Conservation, Division of Water indicated the state does not designate or recognize the "Water Reserve" category mentioned by the commenter.[67]

In summary, there is no evidence to suggest harm to any aquifers or drinking water resources, and hundreds of wind farms have been built without such impacts.

Lastly, and contrary to the assertion in Submittal 284, the DEIS does not describe Attica reservoir as a sole-source aquifer. Potential impacts to the Attica Reservoir are discussed in FEIS Sections 6.11.4, 6.11.11, and 6.11.6

6.11.26 Water Wells (011, 024, 030, 070, 109, 128, 139, 155, 175, 182, 205, 214, 297, 324, 334)

On page 70 Section 3.4 Water Resources (DEIS) - Sources of Domestic Water Supply: Groundwater from private wells is the main source for domestic water supply in the Project Area. No municipal water service is available in the Town of Orangeville. The DEIS omits or disregards residential wells / water supply for homes adjacent to but outside the project area. Nothing was noted in the DEIS if a homeowners well or pond water was contaminated, collapsed or drained. What would be done to remedy this? What will be done and who will be responsible to make the

[66] see http://www.dec.ny.gov/lands/36119.html

[67] Jeff Myers, personal communication, 6/10/10

property and water resource whole? Will the Town of Orangeville require a bond to deal with this potential significant negative impact (should it occur) that could threaten the health and welfare of its citizens? (Attachment: pg. 70 DEIS, 1 pp.) (Submittals 011 - Humphrey, Sally; 024 – Raab, Sherri; 030 – Griffin, Mike; 070 – Hopkins, Mary Jo; 109 – Dylag, M.; 128 – Orlowski, Joseph; 139 – Dickinson, Darryl; 155 – Dickinson, Mary; 175 – Malicki, Richard; 182 – Librock, John; 214 – Makson, Paul; 297 – Ramsey, Donna; 324 – Bell, Ron)

I live down hill and less then a half mile from several proposed turbines. What protection will you provide to me regarding the quality and flow of my well water? The methods you have proposed are neither adequate nor reliable to wells that are so close and literally "down hill'. (Submittal 205 – Makson, Linda)

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

> *[DEIS] Page xxii – There are two major aquifers located outside, but adjacent to the Project Area: Buffalo Creek and Tonawanda Creek. Based on the conclusions of the Wellhead Protection Study for Varysburg, it is reasonable and conservative to assume that a wind turbine will not affect a drinking water well if the turbine is located 500 feet or more from the well. Will there be a fund established to ensure these outcomes? And to pay for remedies if these outcomes are not achieved? In order to protect its citizens, the Town Board should use more than assertion for protection.*

There are many more examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

Response: Analyses summarized in the DEIS concluded that construction activities like those proposed by Stony Creek are unlikely to affect wells more than 500 feet away. No WTG locations are proposed within 500 feet of any residences (with or without wells). Stony Creek should be notified promptly of any claims of damage to wells or ponds. Complainants are encouraged to utilize the Complaint Resolution Plan (DEIS Appendix I.2). Because effects to wells over 500 feet away from WTG sites are not anticipated, no fund or bond has been established.

It is also noted that 75 wind turbine foundations were constructed in the neighboring Town of Sheldon with no reports of turbine construction or operation affecting any drinking water wells.

6.11.27 Well Protection Agreement (132)

I would like Invenergy and the members of the Orangeville Town Board to sign an agreement to protect my property in the event that the wind turbines cause my well to fail and/or change the quality of my water. (Submittal 132 – Jensen, Paul)

Response: The potential for effects to wells is discussed in the DEIS. Because effects are unlikely and not anticipated, the Town does not anticipate the need for such agreements.

In the unlikely event the commenter believes construction or operation of the facility has or is affecting his well, he is encouraged to use the complaint resolution process described in the DEIS and FEIS Section 6.5.

6.11.28 Water Well Locations (279)

I would like to thank you for the opportunity to provide comment on the February 18, 2010 Draft Environmental Impact Statement (DEIS) submitted to the Town of Orangeville, in accordance with the State Environmental Review Quality process, for the Stony Creek Wind Farm. Our primary interest in this matter is the potential impacts of the proposed project on public health. While the DEIS adequately addresses most of the concerns typically associated with public health, this office has the following comment where we believe additional information should be provided by the applicant.

Section 3.4.3 Groundwater - Existing Conditions (General Groundwater Quality). Attached please find a site map identifying parcels, within the proposed wind farm area, where this office has information and/or sampling data pertaining to potable groundwater sources. As part of the Mitigation Section planning this office should be listed as a contact to assist in identifying any potential contamination concerns that may occur if any construction phase is to be within 500 feet (Zone of Influence) of a groundwater source as identified in the DEIS.

Should you have any questions please do not hesitate to contact me. Again, thank you for providing this office the opportunity to review and comment on this DEIS. (Submittal 279 – Perkins, Stephen, Wyoming County Health Dept.)

Response: Subsequent to this comment being submitted, the Wyoming County Health Department was able to provide specific locations of wells in the Project Area. FEIS Appendix A.2.o is a map that shows these well locations and locations of proposed Project facilities.

As discussed in the DEIS a buffer of 500 ft between ground disturbance and wells is more than adequate to protect wells from impacts. The map FEIS Appendix A.2.o includes a 500 ft radius circle around every well location so that it can be easily seen that Project facilities are not planned within 500 ft of any well owned by a non-participating owner.

6.11.29 Well Survey (280)

The DEIS Scope Section 3.4.3 Groundwater indicates under "Characterization "it will present a number of items. However, the DEIS fails to detail the "Prevalence of use of groundwater for drinking water." The DEIS should have included a groundwater use inventory, survey or study. In many rural communities, with large and small farms and homesteads the use of groundwater for drinking water by humans and livestock is common. The impact and needed mitigation measures to these groundwater users during and after construction activities should be fully completed. Could you please provide specific characterization of the prevalence of use of groundwater for drinking water? (Submittal 280 – Core Environmental)

The DEIS Scope Section 3.4.3 Groundwater indicates under "Impacts" it will discuss a number of items. However, the DEIS fails to detail the "Potential impacts to quality and quantity of private water supplies." Again, the DEIS should have included a groundwater use inventory, survey or study to identify these private water supplies. Without identifying the private wells the impact

and mitigation requirements can not be determined. Could you please provide specific potential impacts to quality and quantity of private water supplies? (Submittal 280 – Core Environmental)

The DEIS Scope Section 3.4.3 Groundwater indicates under "Mitigation" it will evaluate potential mitigation measures that may include "Avoiding excavation in zones of influence of drinking water wells." The location of all the wells was not determined and therefore the zones of influence may not be avoided during excavation. Again, the DEIS should have included a groundwater use inventory, survey or study to identify these private water supplies. Could you please provide a means to avoiding excavation in zones of influence of drinking water wells that includes the location of all the wells and the zones of influence? (Submittal 280 – Core Environmental)

The DEIS Section 3.4.3 Groundwater indicates under "Existing Conditions" (page 70) that "Groundwater from Private wells is the main source for domestic water supply in the project area." The DEIS should have included a groundwater use inventory, survey or study to identify all groundwater users in the Project Area. Springs should also be identified and included in the survey to ensure they are not damaged and/or can be mitigated. Since groundwater from private wells is the main source for domestic water supply in the project area, shouldn't the location of all wells and springs be identified? (Submittal 280 – Core Environmental)

The DEIS Section 3.4.3 Groundwater indicates under "General Groundwater Quality" (page 71) that "Private well locations and groundwater quality data are not maintained by either Wyoming County or the Town of Orangeville." The DEIS should have included a groundwater use inventory, survey or study to identify all groundwater users in the Project Area. The New York State the Department of Health (DOH) should be contacted for drinking water data, testing and reporting information. Shouldn't the DEIS include information from the DOH regarding general groundwater quality and not rely on a study/document by LaSala from 1968? (Submittal 280 – Core Environmental)

The DEIS Section 3.4.3 Groundwater indicates under "Mitigation" (page 74) includes three paragraphs. The first paragraph indicates that "impacts to the local shallow groundwater due to pumping will not be significant and therefore, no mitigation is required." However, this does not match the DEIS Scope which indicates "Avoiding excavation in zones of influence of drinking water wells." The location of all the wells was not determined and therefore the zones of influence are not known. How can impacts to the local shallow groundwater due to pumping be known to not be significant and not require mitigation when it has not been characterized? (Submittal 280 – Core Environmental)

Response: Proposed turbine sites have been selected to avoid locations close to residences. Stony Creek will maintain a minimum of distance of 1,320 feet between wind turbines (as measured from the center of the wind turbine tower) and the nearest non-participating dwelling. Turbines will be located a minimum of 700 feet from the boundary lines of parcels owned by non-participating landowners. By definition therefore, no turbines will be constructed within 500 feet of wells on non-participating properties, and a survey to identify specific locations of water wells is not necessary.

As further evidence that Project facilities are located sufficiently far from wells on properties of non-participating owners, please refer to the discussion in FEIS Section 6.11.28 on locations of wells identified by the Wyoming County Department of Health.

6.11.30 Data on WTG Impacts to Wells (280)

The third paragraph [of DEIS Section 3.4.3] indicates that

> *"the presence and/or construction of the WTG will not impact drinking water wells more significantly than a new residential property. Additionally, there is an indiscernible impact to the recharge area for the groundwater supplies to the Town of Orangeville. Based on the limited amount of impact to the watershed, no mitigation is required."*

There is no basis for the statement. The pumping of groundwater impacts have not been determined nor mitigation provided. What is the basis for stating that the presence and/or construction of the WTGs will not impact drinking water wells more significantly than a new residential property? Is their specific data for this type of statement? (Submittal 280 – Core Environmental)

Response: The DEIS equates, in general terms, the effects to the watershed of excavation of a residential basement or the similar-sized excavation for the foundation of a WTG. The premise for concluding wells would not be affected is described in detail on page 72 of the DEIS, where conclusions of the Genesee/Fingerlakes Wellhead Protection study are described.

Sources of water for construction are discussed in DEIS Section 3.4.3 (page 73). As described in the DEIS, Stony Creek anticipates drawing from one of the many *surface* water sources, typically ponds, and not from a well. Drawing of water from ponds would be arranged with the owner of the pond and would be done in accordance with NYSDEC regulations. In the unlikely event that Stony Creek must draw water from a well, Stony Creek will limit quantities to what would be drawn for a medium size dairy barn, a typical use in the Project Area. Such levels of water withdrawal should not impact other wells, as several other users in the area draw these levels of water every day. FEIS Table 32 lists typical water consumption requirements during Project construction.

6.11.31 Water Quality Data (280)

The DEIS Scope Section 3.4.3 Groundwater indicates under "Characterization" it will present information on groundwater quality. The DEIS fails to characterize the "Quality of existing groundwater for drinking water use as determined from publicly and readily available records and information available from Wyoming County Soil Conservation Services and the Town of Orangeville." The DEIS Scope document implies that these agencies have groundwater for drinking water quality data that will be included in the DEIS. These agencies do not maintain this data. In New York State the Department of Health (DOH) oversees the drinking water supply. The DEIS should have included information from the DOH and not rely on a study/document by LaSala from 1968. The reviewer was not able to locate the referenced document noted in the footnotes of the DEIS. Could you please provide specific quality of existing groundwater for drinking water use as determined from publicly and readily available records and information from an appropriate source? (Submittal 280 – Core Environmental)

Response: As noted in the comment, neither Wyoming County nor the Town of Orangeville maintains data on quality of well water in Orangeville. Data from the Department of Health and the US Environmental Protection Agency pertains only to public water supplies. Because this information is not available from these agencies, it was not included in the DEIS. Nor was there

any reason to independently gather this information. Because turbine sites are not proximate to wells, there is no reason to expect the Project will impact well water quality and thus there is no need for the DEIS to compile well water quality data from sources beyond those specified in the DEIS Scope.

The wellhead protection study that is referenced in DEIS footnote number 47 is provided in FEIS Appendix B.b.

6.11.32 Applicability of Varysburg Wellhead Report (280)

The DEIS Section 3.4.3 Groundwater indicates under "Impacts from Excavation Activities" (page 71) it will discuss "The potential impact of performing excavation or other development in the vicinity of a drinking water well was addressed in a well head protection study for the region..." The DEIS goes on to indicate that the "study evaluated well fields for several public water systems Wyoming and Genesee County, including a public water supply field near the Project Area (Route 98 and School Street) in the Hamlet of Varysburg." (The Genesee/Finger Lakes Regional Planning Council, "Genesee/Fingerlakes Wellhead Protection Study", Rochester, New York. December 1998). The well location at Route 98/School Street is in a valley, which is in stark contrast to the locations of the WTGs, and construction areas. How can the impacts from excavation activities on groundwater be evaluated without the location of the wells being identified? Isn't basing the well head protection area on this study inappropriate due to topographic and hydrogeologic differences in the study area and project area? How was the potential impact of performing excavation or other development in the vicinity of a drinking water wells was addressed in the well head protection study applicable to all the excavation areas? (Submittal 280 – Core Environmental)

Response: The Stony Creek EIS benefits from the availability of a wellhead protection study not only in the same county, but less than 2 miles from the study area.

New York Public Health Law, Section 225, Part 5, Subpart 5-1 Standards for Water Wells - Appendix 5B provides the following *statewide* minimum separation distances to protect water wells from contamination.

Table 36. State Requirements on Well Setbacks

Contaminant Source	Distance (feet)
Chemical storage sites not protected from the elements (e.g., salt and sand/salt storage)[2]	300
Landfill waste disposal area, or hazardous or radiological waste disposal area[2]	300
Land surface application or subsurface injection of effluent or digested sludge from a Municipal or public wastewater treatment facility	200
Land surface application or subsurface injection of septage waste	200
Land surface spreading or subsurface injection of liquid or solid manure [3]	200
Storage Areas for Manure piles [4]	200
Barnyard, silo, barn gutters and animal pens [5, 6]	100
Cesspools (i.e. pits with no septic tank pretreatment)	200
Wastewater treatment absorption systems located in coarse gravel or in the Direct path of drainage to a well	200
Fertilizer and/or pesticide mixing and/or clean up areas	150
Seepage pit (following septic tank) [5]	150

Underground single walled chemical or petroleum storage vessels	150
Absorption field or bed [5]	100
Contained chemical storage sites protected from the elements (e.g. salt and sand/salt storage within covered structures) [7]	100
Septic system components (non-watertight) [5]	100
Intermittent sand filter without a watertight liner [5]	100
Sanitary Privy pit [5]	100
Surface wastewater recharge absorption system constructed to discharge storm water from parking lots, roadways or driveways [5]	100
Cemeteries	100
Sanitary privy with a watertight vault	50
Septic tank, aerobic unit, watertight effluent line to distribution box	50
Sanitary sewer or combined sewer	50
Surface water recharge absorption system with no automotive-related Wastes (e.g., clear-water basin, clear-water dry well)	50
Stream, lake, watercourse, drainage ditch, or wetland	25
All known sources of contamination otherwise not shown above	100

Notes:

1. The listed water well separation distances from contaminant sources shall be increased by 50% whenever aquifer water enters the water well at less than 50 feet below grade. If a 50% increase in separation distances can not be achieved, then the greatest possible increase in separation distance shall be provided with such additional measures as needed to prevent contamination. See also Note 6 to Table 2.

2. Water wells shall not be located in a direct line of flow from these items, nor in any contaminant plume created by these items, except with such additional measures (e.g., sentinel groundwater monitoring, hydraulic containment, source water treatment) as needed to prevent contamination.

3. Based upon on-site evaluations of agricultural properties done per agricultural environmental management (AEM) or comprehensive nutrient management plan (CNMP) programs by a certified nutrient management planner or soil and water conservation district (SWCD) official, water wells may be located a minimum of 100 feet from areas subject to land spreading of manure.

4. Water wells may be located 100 feet from temporary (30 days or less) manure piles/staging areas that are controlled to preclude contamination of surface or groundwater or 100 feet from otherwise managed manure piles that are controlled pursuant to regulation in a manner that prevents contamination of surface or groundwater.

5. When these contamination sources are located in coarse gravel or are located upgrade and in the direct path of drainage to a water well, the water well shall be located at least 200 feet away from the closest part of these sources.

6. Animal pen does not include small pet shelters or kennels housing 3 or fewer adult pets.

7. Chemical storage sites as used in this entry do not include properly maintained storage areas of chemicals used for water treatment nor areas of household quantities of commonly used domestic chemicals.

In reference to the petroleum products within the turbines and associated equipment, the Stony Creek Wind Farm is best described by the category “All known sources of contamination otherwise not shown above,” which has a setback requirement of 100 feet. Stony Creek WTGs will be no less than 700 feet from wells on non-participating properties.

6.11.33 Document Request: Varysburg Wellhead Protection Study (341)

Executive Summary – page xxii. Please include in the Final Environmental Impact Statement (FEIS) a copy of the Wellhead Protection Study for Varysburg, which concludes that the project will not affect potable drinking water if the turbines are located 500 feet or more from wells. (Submittal 341 – NYS Dept of Public Service)

Response: The requested document is provided in FEIS Appendix B.b.

6.11.34 Foundation Dewatering: Effects on Wells (334)

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

> *Page xxii - Dewatering of the excavation site may be conducted to facilitate proper placement of foundations. Impacts to unconfined, unconsolidated, shallow groundwater resources and/or natural springs (if encountered) may include temporary lowering of the water table within the immediate vicinity of the excavation during tower excavations via pumping, but it is not anticipated that the groundwater levels would be affected more than 50 to 100 feet away from the pumping activity. [BASED on WHAT?]*

There are many more examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

Response: The section of the DEIS which is the subject of the comment is an Executive Summary. Additional supporting information is available in the corresponding main text of the DEIS (see DEIS Section 1.4.5 on page 24, and DEIS Section 3.4.3 on page 72).

The Genesee/Finger Lakes Wellhead Protestation Study (1998) includes an assessment of well heads (municipal water supplied from groundwater) and potential contaminant sources in the area. Study Area I of the report is the "Varysburg Study Area" which assessed groundwater flow data and potential impacts to wellheads in Sheldon and Orangeville. The study uses a base radius of influence of up to 500 feet from a pumping area (anything outside of 500 feet of the well would not be "drawn" into the well area by the pumping, or conversely would not draw down the water table more than 500 feet away from the well). However this is based on pumping from a deep aquifer at a rate of up to 500 gpm. Therefore, it is reasonable to assume the radius of influence on the temporary pumping of surficial groundwater from a shallow pit (e.g., 10 feet deep) and at a slower rate (50 - 100 gpm when dewatering a pit) would be significantly less (i.e., 50 to 100 feet). However, even at the most conservative estimate of 500 feet, the required zoning setbacks would place a foundation pit well away from residential wells and therefore, no impact would be anticipated, even in a temporary scenario. Once pumping stopped, water levels at the pit would return to the normal seasonal averages.

Lastly, wind turbine foundations have been constructed in the neighboring town of Sheldon, with no reports of turbine construction, including dewatering activities, affecting drinking water wells.

6.11.35 Water Pumping Requirements (280)

The second paragraph [of DEIS Section 3.4.3] indicates that "If Stony Creek obtains water for dust control from local sources, it will draw this water either from surface water or it will limit the amount drawn from a well for this purpose to the amount that would be drawn by a medium size dairy operation in the area." How can impacts to the local shallow groundwater due to pumping be known to not be significant and not require mitigation when it has not been characterized? What is the amount of water that would be drawn by a medium size dairy

operation? How is this mitigation for another groundwater user that may utilize the source for their dairy farm or other operational usage? (Submittal 280 – Core Environmental)

Response: Sources of water for construction are discussed in DEIS Section 3.4.3 (page 73) and in FEIS Section 6.4.4.

6.11.36 Depth to Bedrock, Hydrology, and Groundwater (288)

Glacially deposited sediments have a wide range of hydraulic conductivity. The materials carried by glaciers range in size. Deposits can be as large as a boulder or fine as a silt deposit. The deposits in the Orangeville area are a result of glacial unstratified deposition of materials creating a till that has a low hydraulic conductivity, especially in areas rich in clay (Soil Survey of Wyoming County, New York April, 1974).

The hydraulic conductivity is a coefficient of proportionality describing the rate at which water can move through a permeable medium. The density and kinematic viscosity of the water must be considered in determining hydraulic conductivity (Ritter, Dale F. et al., Process Geomorphology, 1995).

"Groundwater can move through subsurface materials at a rate of several feet per day (highly fractured rock, gravel beds) or as slow as several feet per year (slightly fractured rock, clay beds). Porosity permeability and groundwater gradient have much to do with the velocity of groundwater. The porosity of consolidated subsurface material is the portion of total subsurface which is no occupied by solid material. The permeability of the material relates to its ability to pass water through it by means of gravity. The term is used qualitatively to describe a "permeable sand lens" of "impermeable clay lens," but a more accurate quantitative term used today is hydraulic conductivity. As an aquifer is depleted of groundwater, the hydraulic conductivity will determine how easily groundwater is replaced. This is governed by the size and shape of the pores and their interconnectedness. The major mechanism of contaminant transport is advection, which is the movement of contaminant with the average groundwater velocity" (Hazardous Materials Manual, 5th Edition, 1995). The hydraulic conductivity of soils, and bedrock in the Township of Orangeville is not mentioned in the DEIS.

The Soil Survey of Wyoming County, New York (April, 1974) details the depth to Bedrock and areas characterized by a seasonal high water table in Orangeville. Most if not all of the 66 soils that are listed as making up Orangeville experience frequent flooding, high erodability, seasonally high water tables of 6-18" below grade, have poor traficability, and are recorded as being wet.

Due to the seasonal high water table many residential homes in Orangeville have shallow wells that rely solely on rain and snowfall for recharge. Construction within close proximity of domestic wells can result in reduced recharge, a greater cone of depression and decreased well-head. Well-head refers to the recharge areas for well fields. In order to protect the quality of water draining toward a supply well, well-head protection zones are established (Fetter, CWo Applied Hydrogeology 3rd Edition, 1995). A cone of depression will form in an aquifer around a pumping well (domestic well) as the water level declines. An increase in the cone of depression effects a wells recovery rate and can result in a dry well-no water.

Seasonal high water tables in areas were the slopes are 5% or greater have more slope erosion and sediment yield (Ritter, et al. Process Geomorphology 3rd Edition, 1995). Landform response to a seasonal high water table has increased landslides and debris flows. Evidence of debris flow can currently be seen on Buffalo (Hill) Rd and areas along Quakertown Rd. These areas and others within Orangeville are marked by a 5% increase in slope. The Attica Quadrangle, Warsaw Quadrangle, Dale Quadrangle and Johsonburg Quadrangle illustrate slopes exceeding 8% (State of New York Department of Public Works, US Department of Interior Geological Survey, 1978).

Wind Turbine construction will involve construction practices that allow de-watering of local groundwater. The processes used by construction companies to remove seasonal high water from construction areas to dry an area for road access construction and wind turbine pad construction will eliminate recharge for neighboring wells. Recharge is necessary for well production. The glacial till in this area has a low hydraulic conductivity; which is reflected in a seasonal high water table. This low hydraulic conductivity basically means it takes precipitation longer to seep into the ground water supply (zone of saturation).

Under the current zoning regulations for wind turbine development in the town, there exists limited restrictions for wind turbine construction within 500' of a dwelling. Hydraulic conductivity studies need to be conducted on all drinking wells within 5,280' (five thousand two-hundred and eighty feet) of a proposed wind turbine location. The DEIS does not mention hydraulic testing of wells. The DEIS does not mentions methods which will be practiced to safe guard wells and their productivity (flowrate). In my professional opinion, informed by my review of the soil survey for the Orangeville area, there are substantial areas in the town within which the kind of land disturbance wind turbine siting requires is not feasible, or should be substantially restricted. The DEIS does not incorporate protections for shallow water tables, areas of seasonal high water tables, and fails to address wind turbine development that will significantly affect existing "shallow" wells, drainage basins, wetlands, and increase "standing" surface water. (Submittal 288 – Geoghegan, Heather)

Response: The Lead Agency agrees with the commenter's statement regarding general hydraulic conductivity conditions within the Orangeville area. Numerous soil types in the area display poor conductivity characteristics which can lead to a high seasonal water table in certain areas. Additionally, shallow wells in the overburden are known to exist for residential water uses in the Project Area. The commenter uses these conditions to request a greater setback to residential wells due to the potential for temporary pumping of the water from foundation excavation during construction of the towers.

However, the conclusions regarding the potential effect on the shallow groundwater table from Project construction are flawed. The commenter describes the cone of depression that is created in the groundwater around the point of withdrawal (i.e. pumping). This cone has a gradient (or slope) that is related to the hydraulic conductivity and pumping rate of the well. This cone is defined by the depth of the drawdown versus the area of influence of the drawdown (i.e. the horizontal extent to which the pumping affects the groundwater elevation). This area of influence (AOI) is proportional to the hydraulic conductivity. In other words, a highly conductive soil (sandy gravel with a conductivity of 10 feet/day[68]) would have a shallower

[68] North Carolina Division of Water Resources. 2004. Basic Hydrogeology, Ground Water, Aquifers & Confining Beds. Available at http://www.ncwater.org/Education_and_Technical_Assistance/Ground_Water/Hydrogeology/.

cone of depression and a large area of influence (distance from the well in which pumping affects, or can be affected by the groundwater), when compared to a lower conductive soil (such as a glacial silty clay with a conductivity of 0.00001 feet per day) that would have a steeper cone of depression and a much smaller AOI. This means that water being removed from the shallow wells in the region is localized to the immediate well area and unlikely to be affected by pumping 500 feet away. This is further supported by the findings of the 1998 *Genesee/Finger Lakes Wellhead Protection Study* in which the study assigned a standard fixed radius of 500 feet from a wellhead as a wellhead protection zone for high flow public well systems.[69]

In relation to the effects from the Project, the Project would only remove groundwater on a temporary basis during construction (likely less than three weeks in duration at any foundation site). This would occur only if groundwater is flowing into the foundation excavation. In this case, as with a groundwater supply well, the AOI would be limited due to the low hydraulic conductivity of the soil. Additionally, the pumping would be a temporary condition that would cease when the tower base is complete, at which time groundwater would return to its steady state elevation.

Note that this is different than a residential basement, which would displace a similar volume of soil. If a residential basement is constructed in a shallow water table, the basement will be kept dry by operation of a sump pump. That pump is designed to permanently depress the groundwater table around the house foundation. It should be noted that water supply wells are usually located within 500 feet or less of a residential basement.

The Lead Agency notes that no effects to residential wells have been reported at the nearby High Sheldon Wind Farm where 75 wind turbines were installed in 2008. Based on the regional soil characteristics, the limited potential and short time frame for groundwater removal, and the regionally recommended 500 foot setback to protect high volume well heads, no additional setbacks are warranted.

6.11.37 EAF Form: Flood Plains (280)

EAF Item No. 15 (Page 6 of 21). The project or any portion of project is located in a 100 year old flood plain. However, the question is answered with a check mark in the "No" box. FEMA Flood Boundary Zone A areas of 100 year flood associated with Stony Brook, Stony Creek and the Attica Reservoir 3 are present. Does the applicant/sponsor recognize the presence of the flood plains within the Project Area? Why were the floodplains omitted from the EAF? (Submittal 280 – Core Environmental)

Response: DEIS Section 3.2.2 addresses the presence of, and potential for effects related to FEMA-designated floodplains. The FEIS provides an updated map showing the revised project layout relative to FEMA flood plains. Please see page 54 of the DEIS, DEIS Map 11, and FEIS Appendix A.2.f. In the the FEIS layout the Project will include installation of one ECS cable that will cross five relatively narrow (approximately 100 feet wide) FEMA flood plains located along tributaries of Stony Brook. Also, the access road to T-33 will cross a narrow FEMA flood plain located along a tributary of Stony Brook. No wind turbines are in FEMA flood plains, and the

[69] Genesee Finger Lakes Regional Planning Council. 1988. Genesee/Finger Lakes Wellhead Protection Study. Rochester, New York.

substation, O&M building, and construction laydown yard are all propose for locations outside of FEMA flood plains.

6.11.38 EAF Form: Daily Water Usage (280)

EAF Item No. 23 (Page 7 of 21). The "total anticipated water usage per day is listed as NA (not applicable). This area of the form should be completed to indicate anticipated daily water usage. Does the applicant/sponsor believe the daily water usage will be none? Why was the daily water usage omitted from the EAF? (Submittal 280 – Core Environmental)

Response: Sources of and volumes of water for construction are discussed in DEIS Section 3.4.3 (page 73) and in FEIS Section 6.4.4. Water usage during operations will be principally consist of use at the office/maintenance building, estimated to be 200 gallons per day and which will be supplied by an onsite well.

6.11.39 EAF Form: Aquifer (280)

EAF Item No. 9 (Page 3 of 21). The site is located over a primary, principal or sole source aquifer. However, the question is answered with a check mark in the "No" box, even though a portion of the proposed project site is located over the Cattaraugus Creek Sole Source Aquifer. Does the applicant/sponsor recognize the presence of the aquifer within the Project Area? (Submittal 280 – Core Environmental)

Response: As discussed in FEIS Section 6.11.25, there are no sole source aquifers in the Project Area. Refer to FEIS Section 6.11.25 for more information on aquifers.

6.11.40 EAF Form: Dust Suppression Water (280)

EAF Item No. 22 (Page 7 of 21). The project may "include "water supplied from wells" for watering roads. However, the pumping capacity is not provided but rather indicates NA (not applicable). This area of the form should have been completed to indicate anticipated pumping capacity in gallons/minute. Does the applicant/sponsor believe the pumping capacity of wells as part of the construction or operation of the project components is not going to occur? Why was the anticipated pumping capacity in gallons/minute omitted from the EAF? (Submittal 280 – Core Environmental)

Response: Sources and use of water for construction are discussed in DEIS Section 3.4.3 (page 73) and in FEIS Section 6.4.4.

6.12 Streams and Wetlands

6.12.1 Crow Creek Tributary (382)

Surface Water (Section 3.4.1). A tributary to Crow Creek, crossed by the transmission line between T-8 and T-13, does not appear on the DEIS map. Its WIN is ONT-158-12-46-6A. It is a class A stream, but will be upgraded to A(ts) as it is a tributary to a wild brook trout stream, upper Crow Creek. (Submittal 382 – NYSDEC)

Response: The Crow Creek tributary referenced in the comment is included in the updated stream crossing evaluation in FEIS Section 4.16 and the updated map in FEIS Appendix A.2.d. This stream is located southwest of the intersection of Krotz Road and Old Buffalo Road. The Project proposes to cross this stream with a single buried cable circuit.

It is acknowledged that NYSDEC intends to "upgrade" the classification of this tributary from A to A(ts), and it will remain a protected stream.

6.12.2 Class A Streams (382)

In addition, some class A tributaries of Tonawanda Creek are being crossed in the western part of the project and any crossings there should have the general fishery permit conditions as listed below for the wind projects. While those streams may not have high quality sport fishery value, most do support fish life and measures will be necessary to protect them. (Submittal 382 – NYSDEC)

Response: The Lead Agency concurs that streams that are identified by NYSDEC as class A and class A(ts) streams are DEC-protected streams, and that crossings of these streams will require NYSDEC review and permits. Further, the Lead Agency concurs that for crossings of Tonawanda Creek tributaries by buried cables or access roads, NYSDEC may apply the general fishery permit conditions to permits even though these tributaries are not classified as trout or trout spawning streams. The potential impacts of these crossings have been documented in this Study.

As discussed in FEIS Section 4.16, the layout in the FEIS has fewer stream crossings than the layout that was proposed in the DEIS.

6.12.3 Stream Descriptions and Water Quality Data (278)

Section 3 Resource Characterization, Impact Assessment and Migration – Three major watersheds are found in the project area including Tonawanda Creek, Stony Creek and East Koy Creek. Several streams protected by New York State Article 15 regulations are found in the project area. However, the DEIS does not adequately describe these resources. There is no mention of water quality data or the biota that may inhabit surface waters in the project area. We recommend this section be revised to include baseline data on surface water resources so that an appropriate impact assessment can be completed. (Submittal 278 – US Dept of the Interior)

Response: All three of the watersheds identified in the comment are shown in DEIS Map 13. This map also shows the streams and tributaries that drain into these watersheds.

According to data from NYSDEC, the Project Area contains approximately 35.4 miles of streams, 20.6 miles of which are protected by NYSDEC as either Class A or Class A(ts).

As discussed in FEIS Section 4.16, permanent impacts to DEC-protected streams by the Project will occur from five road crossings of streams. Stony Creek has estimated that these crossings will impact approximately 200 feet of total stream length, or less than 0.2% of the length of all the DEC-protected streams in Project Area.

Because the Project impacts to the streams are limited, and will be minimized through the mitigation procedures listed in this FEIS, a detailed evaluation of stream water quality or biota is not warranted.

6.12.4 Wetlands Delineations and Impacts (278)

The discussion of road and buried cable crossings of streams and wetlands indicate that the project has been designed to avoid these resources to the greatest extent possible. However, it is our understanding that a field delineation of aquatic habitat has not yet been completed. Preliminary estimates anticipate 27 crossings of streams and wetlands. Temporary impacts could total almost 17 acres while it is expected that less than 1 acre would be permanently disturbed. We recommend that the town of Orangeville not approve the project until the sponsor has provided an accurate accounting of stream and wetland impacts and has avoided and minimized impacts to the greatest extent practical. Proposed mitigation for unavoidable stream and wetland impacts should also be included. (Submittal 278 – US Dept of the Interior)

Response: FEIS Sections 4.15 and 4.16 describe the number of stream and wetland crossings and the wetland impacts expected to result from these crossings. The DEIS (in Table 15) estimated temporary impacts to wetlands to total 12.9 acres – not the 17 acres mentioned in the comment. Updated wetland impact calculations provided in FEIS Table 20 show that temporary impacts should be on the order of two acres – significantly less than 12.9 acres estimated in the DEIS.

6.12.5 Wetland Impacts (278)

We believe the DEIS understates the potential impacts to aquatic habitat during construction as well as mortality to birds and bats from project operation. (Submittal 278 – US Dept of the Interior)

Response: Since the writing of the DEIS, Stony Creek has completed additional field studies to further quantify expected impacts to wetlands and streams. FEIS Sections 4.15 and 4.16 discuss the temporary and permanent impacts to streams and wetlands based on field delineations performed by EDI for Stony Creek.

The DEIS (in Table 15) estimated that impacts to wetlands would be 12.9 acres temporary, and 0.6 acres permanent. Based on the additional field work and modifications to the Project described in this FEIS, the impacts are now estimated to be 0.5 acres or less of permanent impact. Thus, the expected impacts are less than was estimated in the DEIS.

In addition to the overall efforts to quantify impacts to wetlands and streams, Stony Creek has taken steps to identify areas where aquatic habitat may be present for Jefferson salamander, a species of special concern in New York that is known to breed in the Project Area. FEIS

Sections 4.5 and 6.19.26 describe the areas where this species has been found to breed and mitigation measures to be taken to minimize impacts to known habitat for this species.

Potential bird and bat mortality has been studied extensively in the DEIS and FEIS and is expected to be relatively low at this site.

6.12.6 Construction in Streams and Wetlands (278)

The DEIS should include more information on the specific construction method to be used at each stream and wetland crossing. Further, more specific information should be provided on wetland restoration techniques. (Submittal 278 – US Dept of the Interior)

Response: Construction methods to minimize impacts where ECS and roads cross streams are addressed in FEIS Section 4.15. Wetland restoration is also discussed in FEIS Section 4.15.

6.12.7 DEC Guidance for Stream Crossings (382)

The following guidance pertains to work involving the crossing of water bodies and work in close proximity to regulated streams as well as culvert design.

- *If work occurs within 50' of the top of a* bank of a NYSDEC classified C(t) or C(ts) stream, erosion control planning will be necessary. This should *be part of the storm water management plan for the site.*
- *All underground collection lines and culvert crossings shall be done in the dry.*
- *All work is prohibited in a protected trout stream from 15 October through 31 May. If wild brook trout are present, closure date should be 1 October. For example, since the tributary of Crow Creek is a brook trout stream, 1 October would apply as brook trout spawn earlier than brown trout.*
- *Siltation prevention measures shall be installed and maintained during the project to prevent movement of silt and turbid waters from the project site and into any watercourse, stream, water body or wetland.*
- *Before trenching through stream banks, upland sections of the trench shall be backfilled or plugged to prevent drainage of possible trench water into the stream.*
- *Underground collection lines and culvert installations shall be done in one operation without any delay between construction phases.*
- *All permanent culverts crossings shall be entrenched a minimum of 1 foot below bed elevation.*
- *All permanent culvert crossings shall be designed to meet a 25 year flood event. This can be accomplished either by conveying the flood entirely through the culvert or w/ an overflow spillway that directs the water immediately back to the stream.*

- *All permanent culverts and culverts in longer than 60 days shall have a rocked headwall and a downstream splash apron extending 3 times the culvert diameter to prevent erosion. Rock size should be of an even mix from 6 to 18 inches in diameter.*

Care must be taken to design and build culverts correctly – particularly when it involves crossing a navigable water body or a state regulated stream. Please see our website for an overview on proper culvert design: http://www.dec.ny.gov/permits/49060.html. The particular details of culvert design must be worked out in consultation with the NYSDEC and must address concerns such as 25 year flood event design, maintaining channel geometry, proper use of rip rap, cofferdam specifications, work in the dry, culvert slope, etc. (Submittal 382 – NYSDEC)

Response: The Lead Agency acknowledges that for crossing of Protected Streams the general fishery conditions listed in Comment 382 may be applied to the NYSDEC Article 15 Permits Disturbance of Bed and Banks. Potential impacts and mitigation measures for crossing of DEC-protected streams is addressed in FEIS Sections 4.15 and 4.16.

6.12.8 Road Widths Crossing Streams and Wetlands (278)

Page 14 indicates that access road width will be reduced from construction widths of 32 feet down to 16 feet during site restoration except where the landowner prefers the wider road. We note that this exception should not apply when roads cross streams and wetlands in order to comply with State and Federal law. (Submittal 278 – US Dept of the Interior, Fish and Wildlife Service)

Response: Comment noted. Table 23 lists the locations where Project Access roads will cross streams. Six road crossings are expected: three crane roads and three standard roads. At the locations where crane roads cross streams, Stony Creek will not reduce the road width after construction, unless the “stream” is an intermittent water way in an area that is active used for agriculture.

6.12.9 Crossings of Intermittent Streams (280)

The DEIS Section 3.4.1 Surfacewater, Existing Conditions, under "Impacts" (page 64) first paragraph indicates with regards to stream crossings that "Several of these locations appear to be at points where streams 'start' in open fields and the streams are intermittent or difficult to discern many times a year." We suspect the number of creek crossings estimated may be low and would like to see the intermittent streams, which are protected by the NYSDEC, accounted for more conservatively with the 25 year storm event (i.e., 7.0 inches). Is there a way that the locations of points where streams 'start' in open fields and the streams and intermittent can be discerned and determined? (Submittal 280 Core Environmental?)

Response: Potential impacts to streams have been adequately assessed in the EIS process, including the discussion in FEIS Section 4.16 which lists crossings of intermittent streams. Stony Creek acknowledges (and the DEIS and FEIS have considered) that the NYSDEC regulates both permanent and seasonal/intermittent streams via its General Permit for Stormwater Discharges from Construction Activity - GP-0-10-001. Lastly, the Lead Agency notes that According to http://precip.eas.cornell.edu/data.php, the 25-year, 24-hour rainfall for Orangeville is 3.38 inches, not the 7.0 inches stated by the commenter.

6.12.10 DEC Wetlands (382)

Freshwater Wetlands ([DEIS] Section 3.4.2). The following comments focus primarily on freshwater wetlands within the proposed Stony Creek Wind Park project area.

Based on a preliminary review of GIS resource maps as well as the preliminary wetland location maps prepared by the applicant, approximately 20 unmapped freshwater wetlands (i.e., wetlands exceeding 12.4 acres in size that are not currently mapped as state-regulated wetlands) are likely present within the project area. The areas in question include the immediate vicinity of the following project features:

- *Proposed Turbines T-01, T-02, T-04, T-09, T-16, T-27, T-32, T-33, T-37, T-38, T-43, T-44, T-45, T-51, T-53, T-54, T-56, T-57, T-58*
- *Access Road & ECS Collection Line Between T-01 & T-02*
- *ECS Collection Line East of T-01 & T-02*
- *Access Road & ECS Collection Line West of T-04*
- *ECS Collection Line North of T-09*
- *ECS Collection Line West of T-09*
- *Access Road/Crane Path & ECS Collection Line Between T-15 & T-17*
- *ECS Collection Line Southwest of T-24 (at Old Buffalo Road Crossing)*
- *ECS Collection Line Between T-26 & T-27*
- *Crane Path & ECS Collection Line Between T-27 & T-28*
- *ECS Collection Line West of T-30*
- *Access Road & ECS Collection Line Between T-35 & T-36*
- *ECS Collection Line North of T-38*
- *Crane Path & ECS Collection Line Between T-44 & T-45*
- *Crane Path & ECS Collection Line North of T-51*
- *ECS Collection Line North of T-53*
- *Access Road & ECS Collection Line Between T-53 & T-54*
- *ECS Collection Line West of T-54*
- *ECS Collection Line Between T-56 & T-57*

- *Access Road & ECS Collection Line Between T-57 & T-58*
- *Access Road & ECS Collection Line Between T-58 & T-59*
- *Access Road R-25*

A NYSDEC biologist will need to investigate the above listed areas in the field to make final determinations regarding state wetlands jurisdiction in close proximity to proposed project features. The applicant must submit a copy of their consultant's federal wetlands delineation report directly to the NYSDEC Region 9 Buffalo Office, Fish, Wildlife, & Marine Resources, once it is available. This submittal should include detailed mapping of the delineated wetlands (similar to the 1"=1,000' scale maps showing preliminary wetland locations provided in the DEIS). The FEIS should contain a full discussion of the potential state regulated wetlands. Discussion should also demonstrate that the project has avoided or reduced wetland and adjacent area impacts to the maximum extent practicable. (Submittal 382 – NYSDEC)

Response: As discussed in FEIS Section 4.15, Stony Creek has completed delineations of wetlands in the areas that could be impacted by the Project, and this addresses all of the areas listed in the comment. FEIS Appendix A.2.d shows the locations of these delineated wetlands relative to project features. Stony Creek has provided the NYSDEC with shape files for these delineations and has met in the field with a NYSDEC biologist to review the delineations in areas where the NYSDEC may have jurisdiction.

6.12.11 Wetland Mitigation Area (110, 111, 112, 113, 114, 115, 116, 117, 118, 192, 193, 194, 195, 337, 278)

If the wetlands are affected by the Stony Creek Wind project, they claim they will to the best of their ability create new wetlands. Where and whose land do they propose to use for this? Also, why if they damage said wetlands do they require an easement on the land that destroyed it in the first place? What properties in Orangeville have been secured to create new wetlands? (i.e.: binding contract). Is said property NYSDEC approved for wetlands? How many acres? Who will monitor new wetlands? Who will reintroduce new plant and wildlife to the wetlands? (Submittals 110 – Donohue, James; 111 – Malark, Michael; 112 – Kibletz, Christopher; 113 – Carrick, George; 114 – Snyder, Allen; 115 – Piontkowski, Ronald; 116 – Dusterhus, Matthew; 117 – Stock, J.; 118 – Piazza, Richard; 192 – Clark, Kevin; 193 – Clark, Shirl; 194 – Bonner, John; 195 – Aprial, Pete)

Likewise, the results of field wetland delineations should be included in the report. The discussion of indirect impacts to wetlands fails to mention potential changes or loss of hydrology due to construction activities. Further, compaction of soils and channeling of water away from wetlands can result in changes to vegetation structure and function. We find the wetland mitigation section lacking in sufficient detail to determine if proposed compensation will adequately replace wetland functions and services. More detail should be provided that includes specific mitigation site details and design. (Submittal 278 – US Dept of the Interior)

Project will risk damaging protected wetlands and the reservoir supplying the neighboring town. Project will accept that the wind company will repair or replace as much as possible any damaged protected wetland (with what surrounding available properties?) (Submittal 337 – Ramsey, Gerald and Donna)

Response: Plans for wetland mitigation areas, which will only occur on the lands of consenting owners, are addressed in FEIS Section 4.15. Stony Creek has completed field delineations of wetlands and these also are addressed in FEIS Section 4.15.

6.12.12 Backup for DEIS Executive Summary Statement on Wetlands (334)

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

- *Page xxii – If wetland areas are impacted during construction as part of restoration activities, Stony Creek will restore the pre-construction conditions to the extent practicable.*

Who decides what is practicable? Why should the Town Board or citizens believe that a "restored" wetland will have the full vibrancy of the original? This is similar to claims of restoring a forest with saplings with the argument that a "tree is a tree." But the ecosystem and its inhabitants know the difference between a mature old-growth tree and a replacement sapling.

There are many more examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

Response: Plans for wetland mitigation are discussed in FEIS Section 4.15. The Project's effects on wetlands and other waterways falls under the jurisdiction of federal and state laws enforced by the US Army Corps of Engineers and the NY Department of Environmental Conservation. These agencies will ensure that any wetland mitigation plans meet standards they consider necessary for replacement wetlands. The Town Board, as Lead Agency, will make its own determination on impacts to jurisdictional and non-jurisdictional wetlands and any required mitigation, based on the Project DEIS and FEIS.

6.12.13 Wetland Protection in Zoning Law (284)

Wetlands are transition areas between uplands and aquatic habitats (NYS DEC). Wetlands are instrumental for flood and storm water control, surface and groundwater protection, erosion control, pollution treatment and nutrient cycle, fish and wildlife habitat, and public enjoyment. Because the zoning does not include criteria to protect these freshwater sources they will be exposed to construction site runoff pollution, erosion, sedimentation, siltation, and possible fill-in. The zoning makes no reference to the New York State Legislatures passing of the Freshwater Wetlands Act of 1975. The intent of this Act is to preserve, protect and conserve freshwater wetlands and their benefits, consistent with the general welfare and beneficial economic, social and agricultural development of the state. The DEIS does not provide studies of the wildlife habitats found in the Project Area or provide methods to limit wetland disruption. (Submittal 284 – Geoghegan, Heather)

Response: It is not necessary, nor appropriate, for a local zoning law to address such issues as "site runoff pollution, erosion, sedimentation, siltation, and possible fill-in" as these matters are addressed by federal and state law (including SEQRA) applicable to every land use project. The comment is inaccurate to the extent it suggests the absence of these issues from the zoning law creates an exemption from regulation. The comment is additionally incorrect in that, as

required by the DEIS Scope, the DEIS included an assessment of wetlands in the Project Area and potential impacts to these wetlands. FEIS Appendix A.6.a provides more information on wetlands in the Project Area and FEIS Section 4.15 contains more information on potential wetland impacts and measures to mitigate these impacts.

Stony Creek will build and operate the Project in compliance with all applicable state and federal laws on wetland protection, including those laws that are enforced by the US Army Corps of Engineers and the NY State Department of Environmental Conservation. These laws and the mitigation required by the Lead Agency will, contrary to the assertion in the comment, mitigate potential impacts to the maximum extent practicable.

6.12.14 Makson Wetland (204)

There is a Federally-protected wetland bordering my property. This property is within a mile of several proposed industrial wind turbines. This body of water is used by the migrating birds, geese, ducks, and other species. Additionally, this body of water is 'home' to beavers, turtles and many, many, aquatic micro organisms. Additionally, the salamanders, chipmunks, squirrel birds, each 'feed' off the area. How will you protect this land and surrounding areas? (Submittal 204 – Makson, Paul and Linda)

Response: Potential impacts of the Project to wildlife are discussed in DEIS Section 3.5 and FEIS Sections 6.15, 6.16, 6.18, and 0. The commenter's property is located east of Krotz Road. The subject wetland near the commenter's property is a state wetland that is regulated by the NYSDEC and by the US Army Corps of Engineers. This wetland is identified on maps that were included in the DEIS. As shown in DEIS Map 4, there are no direct impacts to the areas in, or within 100 feet of, the NYSDEC boundaries of this wetland. This wetland appears to be connected by streams to other wetlands north of the commenter's property where a buried cable is planned to pass through or near. Any direct impacts from this cable will be mitigated as described in DEIS Section 3.4.2.

6.13 Plants

6.13.1 Invasive Species (382)

Invasive Species (Appendix I). The focus of the invasive species control in the project should include measures to ensure no net increase in the areal coverage of invasive species in the project development area. Post-construction monitoring and periodic management, including invasive species control and re-planting of preferred indigenous species to ensure survival will be an important part of achieving this goal. The Best Management Plans (BMPs) should be used to ensure that construction activities do not cause an increase in the presence of invasive species throughout the project area, not just directly within regulated wetlands, riparian areas, and adjacent areas. Otherwise, the aggressive nature of these species, if allowed to be introduced and spread in non-regulated areas, would also result in the regulated areas being compromised over time. Control of existing infestations of invasive species, where feasible, could potentially be used to meet part of the mitigation requirements. A final Invasive Species Control Plan will be a requirement of any permits issued by DEC. The DEC requires a ten year monitoring period for Invasive Species. (Submittal 382 – NYSDEC)

Response: The DEIS includes an Invasive Species Control Plan using BMPs to prevent project activities from causing invasive species to spread in regulated areas. Some of the BMPs will also prevent spread of invasive species throughout the entire Project Area (such as sourcing construction materials that are free of invasive plant material). In general, however, Project activities are not expected to significantly change the vulnerability of the entire Project Area to invasive species, thus it is not reasonable to require the Project to undertake actions to eradicate and monitor invasive species throughout the Project Area. The Invasive Species Control Plan in the DEIS appropriately requires protection for the most environmentally sensitive areas that may be directly impacted by the Project.

6.13.2 Import of Invasive Species with Construction Materials (341)

Please describe protocols to prevent fill and other construction materials brought in from off site locations from containing invasive plant matter or seeds. (Submittal 341 – NYS Dept of Public Service)

Response: Stony Creek will identify satisfactory sources of any fill and/or construction materials including topsoil, sand, gravel, rock, and crushed stone, from commercial mines and other offsite locations. Only clean, regional sources of fill and/or construction materials will be used during the construction, and restoration of the Project Area. Stony Creek will require its contractors to meet this requirement, and the Project's quality assurance plan will ensure the requirement is met.

6.13.3 Landmark Trees (337)

[Submittal includes "Citizen's Comments on Invenergy Stony Creek Windfarm and photo documentation" which indicates that landmark trees may be in the project area.] (Submittal 337 – Ramsey, Gerald and Donna)

Response: The New York NYSDEC maintains a current "Big Tree Register." The register may be viewed at http://www.dec.ny.gov/animals/5248.html. Coordination with NYSDEC staff

verified no trees on the register are within the Project Area,[70] and therefore no trees on the register will be affected by the Project. Landowners are encouraged to nominate trees for the register.

6.13.4 Trillium (337)

[Submittal includes "Citizen's Comments on Invenergy Stony Creek Windfarm and photo documentation" which indicates that protected wildflowers such as trillium grow within the 700' setback radius of T-24 along with additional photos showing plant and wildlife (including geese and fox) in the northeast project area.] (Submittal 337 – Ramsey, Gerald and Donna)

Response: No federally-listed *Trillium* species are known to grow in New York State. But there are two *Trillium* species that are listed as New York endangered (but not federally listed): *Trillium flexipes* (nodding trillium) and *Trillium sessile* (toad-shade). Endangered plants listed by the state meet one or more of the following criteria: those with (i) five or fewer extant sites, or (ii) fewer than 1,000 individuals, or (iii) restricted to fewer than four U.S.G.S. 7 1/2 minute series maps.

Four additional Trillium species (*Trillium cernuum, Trillium erectum, Trillium grandiflorum, and Trillium undulatum*) are categorized as exploitably vulnerable native plants. It is a violation for any person anywhere in New York State to pick, pluck, sever, remove, damage by the application of herbicides or defoliants, or carry away, without the consent of the owner, any protected plant including the six species described above.[71]

Two additional *Trillium* species, neither protected by federal or state law, occur in New York State. Stony Creek will implement the project in compliance with regulations protecting these species.

Figure 11 shows the expected construction impact areas around T-24, as indicated in DEIS Map 20. Note that the construction impact area for T-24 is entirely in active agricultural areas, outside the known habitat for Trillium species. Thus, the concern expressed in the comment that Trillium species growing near the site for T-24 is unfounded.

[70] Gloria Vanduyne, NYSDEC, personal communication, 6/25/2010 and 7/7/2010.

[71] Environmental Conservation Law, § 3-0301, 9-0105, 9-1503; 6 NYCRR 193.3

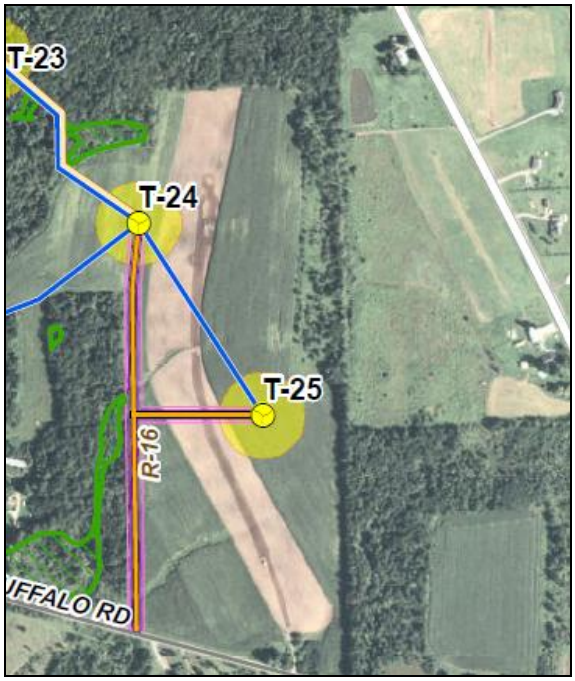


Figure 11. Construction Impact Areas Near Turbine T-24

6.13.5 CSOO Plant Observations (276, 337)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

This is an area that we have great concern in. Most plants get overlooked or just brushed off. The people of Orangeville are very concerned about keeping everything natural that is in the Town of Orangeville. We have found a large number of special concern, threatened or endangered plant species. We have compiled a list of them found in the Town of Orangeville. Most of the forest have white trillium and bloodroot these two plants are on the exploitably vulnerable (likely to become threatened).

Please note that if the wind turbine company starts to cut into the forest, that starts a chain reaction. Plants will die because of too much sunlight like the Indian Pipe and the Turtle head plant. If the turtle head plant dies, then the checkerspot butterfly dies too. These are just a few of the plants in Orangeville. (Attachment: plant list) (Submittal 276 - CSOO - Lomanto, Lynn)

Project will create hostile environment for numerous plants and animals, some protected and endangered. (Submittal 337 – Ramsey, Gerald and Donna)

Response: FEIS Appendix A.4.i contains a list of the 75 species of plants identified in submittal 276. The CSOO list includes no federally-listed species, 14 state-listed species, and 61

un-listed species. The 61 unlisted species includes many common species such as Dandelion, Poison Ivy, and Alfalfa. The unlisted species are likely common to the Project Area and surrounding areas, and construction of the Project will not have a significant impact on the ability of these species to continue to grow in the Project Area and surrounding areas.

Of the 14 state-listed species identified by CSOO, 5 are state-listed as endangered (Blue-eyed Mary, Fireweed, Sky-blue Aster, White Boneset, and Wild Leeks), 1 is state-listed as threatened (Wild Onion), and 8 are state-listed as vulnerable to exploitation. Except for trillium, which is discussed in Section 6.13.4, submittal 276 gives no specific locations where these species are found. Thus, specific impacts of the Project to these species cannot be evaluated.

As discussed in FEIS Section 4.4, the portions of the Project Area to be impacted by the Project are relatively small and the majority are located in agricultural fields. Thus even if these species are present in the Project Area the impact to their habitat will be minimal. Given the small percentage of area to be impacted, the fact that no listed species were identified incidentally during Stony Creek's habitat assessment and various wildlife studies, the fact that the NYS Natural Heritage program has not identified any listed plants in the Project Area, and that the trillium allegedly found in the area is not in the construction area, there is no expectation of harm to NYS-listed species.

Lastly, NYS law treats plants as property of the owner of the property on which they grow, and allows listed plants to be impacted if it is done with the permission of the landowner. In this case, any potential impacts by Stony Creek, would be done on properties where they have expressed permission to conduct construction activities.

6.14 Forest Impacts

6.14.1 Turbines in Forest Areas (278, 382)

A general description of the project area indicates that agriculture and forest dominate the 14,500 acre study area. It is mentioned that construction of the project will result in temporary and permanent disturbance to approximately 380 acres of land. Centrally located in Wyoming County, the project area contains some of the largest remaining blocks of forest habitat – 7,438 acres in total. It is expected that 134 acres of forest will be temporarily impacted by construction and 16 acres permanently lost to project construction. We note, however, that these numbers do not reflect the indirect effects of habitat fragmentation. Approximately 41 percent of the turbines will be built in forest habitat. Road, buried electric cable and turbine pad installation within forests can result in reduced habitat quality, smaller forest patch size and changes in vegetation structure. Fragmentation can also lead to increased predation, lower productivity and the spread of invasive species. (Submittal 278 – US Dept of the Interior)

Response: Land use data used in the DEIS does indicate there are approximately 7,438 acres of forest in the Project Area, but as discussed in FEIS Section 4.10 a closer analysis of forest areas in the Project Area found that there are approximately 36 large blocks of forests in the Project Area and these blocks cover approximately 5,400 acres. Many of the areas that appear as forested in aerial photographs are bisected by residential roads and houses or they are heavily used for recreation.

The updated area analysis summarized in FEIS Section 4.10 shows the total impacted forested area to be less than the 134 acres that was represented in the DEIS given that some of the turbines have been removed from forested areas .

As part of the adjustments to turbine locations made for the FEIS, there are fewer turbines located in forested areas. Table 37 lists the habitats where wind turbines are being located in the FEIS layout. As shown in the table, less than one third of the turbines are in forest habit. The majority of the turbines, 61%, are located in active agricultural fields.

Table 37. Wind Turbine Locations - Surrounding Habitat

Surrounding Habitat	# Turbines	% of Total	Notes
Field	26	44%	Includes hayfields and corn fields.
Field edge	10	17%	Includes turbines located at the edge of a field, where part of the assembly area may impact a forest area. Includes one turbine located in an area planted with Christmas trees.
Forest	17	29%	May include some areas that are only partially forested.
Scrub	6	10%	Includes areas that were likely in agricultural production until relatively recently.
TOTAL	59	100%	

FEIS Section 4.10 summarizes an analysis of the Project on interior forest areas. The Project will avoid impacts to 17 of the 25 interior forest patches in the Project Area, including the largest interior forest patch in the Project Area.

6.14.2 Forest Fragmentation Analysis (278)

Section 3.5 discusses wildlife and habitat in the project area. A statement is made here that agriculture is the dominate land use type. However, several sections in the DEIS contradict that statement including the acreage provided on table 10, Land Cover in the Project Area. The text indicates that no substantial tracts of contiguously forested habitat are found in the project area, but there is no definition as to what constitutes substantial. Further, it should be recognized that in a mosaic landscape pattern, forest size as well as location are important. Many tracts of forest pieced together can collectively be vital to providing access to habitat such as breeding areas (for salamanders and turtles, for example) and form larger corridors for movement. Although the text mentions forest fragmentation, no meaningful analysis was provided on the potential impacts. A map indicating the location of cables and roads, longer than 500 feet long, shows that approximately half of the roads and less than half of the cables are within forested areas. It is not clear why 500 feet was selected as the criteria for this review. In addition, the analysis does not factor in the impact to interior forest species where habitat quality may be reduced due to increased predation, introduction of invasive species and reduced patch size. (Submittal 278 – US Dept of the Interior)

Response: FEIS Section 4.10 summarizes an analysis of the Project on interior forest areas. The Project will avoid impacts to 17 of the 25 interior forest patches in the Project Area, including the largest interior forest patch in the Project Area.

The FEIS layout reflects efforts to minimize the length of cables and roads in forested areas. There are only five interior forest areas that will be fully crossed by Project roads or cables.

6.14.3 Move All Turbines Out of Forest Habitat (278)

We recommend the project sponsor alter the project design to move turbines out of forest habitat. (Submittal 278 – US Dept of the Interior)

Response: Stony Creek has developed the wind turbine layout to balance many competing concerns, including desires to minimize impacts to farm land, forest areas, and wetlands. The resulting project has used existing open areas to the maximum extent practicable.

Table 37 lists the habitats where wind turbines are being located in the FEIS layout. As shown in the table, less than one third of the turbines are in forest habit. A forest fragmentation analysis summarized in FEIS Section 4.10 shows that most of the forest areas in the Project Area are already fragmented and there are relatively few interior forest areas that are crossed by the project.

6.14.4 Forest Construction Impacts as Permanent Impacts (382)

Land Use and Area Impacts (Section 3.2.1of the DEIS) - Tables 11 lists temporary forest impacts at approximately 134.8 acres, and Table 12 lists permanent forest impacts at 16.6 acres. Any loss of forest cover during construction and operation of the project should be considered a permanent impact, as the time it takes to recover this type of habitat is measured in decades rather than months or a few years. Although the shrub/scrub or grassland areas that may result from forest clearing could be utilized by species dependent on those habitat types, DEC considers the conversion of forest cover to another type of habitat as a loss of forest habitat. The estimate of the total forest acreage permanently lost should be revised to include all areas of forest

disturbed/cleared, and the area of forest converted to another habitat type. (Submittal 382–NYSDEC)

Response: DEIS Table 12 included a note regarding areas of forest that were impacted during construction. Updated tables of impact areas are provided in FEIS Section 4.10, and similar to the DEIS Tables, these tables make clear the amount of forest area that could be considered permanent impacted due to its clearing for construction.

6.15 Birds

6.15.1 Robins Returned (362)

I live in the middle of a wind farm project and I have something to tell you folks - the robins have come back. It must be spring time. 362 – Henneberger, Dan (verbal)

Response: Comment noted.

6.15.2 Grassland Birds (278)

A brief section on grassland birds is found in the DEIS. This section lists species observed in the project area, but does not provide information on potential impacts to breeding grassland birds. Yet the most abundant birds detected during the breeding bird surveys were those found in open areas such as bobolink, red winged blackbird and song sparrow but also high counts of savannah sparrow and eastern meadowlark were noted. Despite some areas in the region being used for agriculture which can impact nesting grassland birds, it appears that the project area provided important habitat for the suite of open area species. Placement of tall structures such as wind turbines can displace some of these species for fear of perching raptors. This information should be included in the DEIS. (Submittal 278 – US Dept of the Interior)

Response: The Lead Agency concurs that some of the bird species identified in preconstruction surveys typically nest in non-forested areas. Specifically, 13% of species identified in preconstruction surveys were found only within agricultural/field areas.

None of the grassland birds identified in the preconstruction surveys is state or federally listed.

Further, data from the National Land Cover Database (the "NLCD") indicate that a relatively small portion of the Project Area is a habitat that is classified as "grassland." DEIS Table 10 showed that of the 14,483-acre Project Area, 5,349 acres (37%) was classified in the NLCD as either "71-Grassland/Herbaceous", "81-Pastureland/Hay", or "82-Cultivated Crops." The DEIS grouped these for convenience because they are all relatively open areas, but as mentioned in the comment, agricultural uses of open areas have impact on grassland birds. Thus, to assess the amount of open area in the Project Area that is best habitat for grassland birds, it's worthwhile to divide the value in the DEIS table into individual categories. These are:

- 49.3 acres of "71-Grassland/Herbaceous", or 0.3% of the Project Area;
- 3,153.4 acres of "81-Pastureland/Hay", 21.8% of the Project Area
- 2,146.2 acres of "82-Cultivated Crops", 14.8% of the Project Area

Only 0.3% of the Project Area is categorized as grasslands. The data suggest that open areas in the Project Area are used mainly for agriculture, and introduction of the Project will not be a significant impact to a large amount of grassland habitat.

Impacts to grassland birds may include habitat loss (e.g., direct loss of grassland habitat) and habitat modification (indirect loss due to displacement from suitable habitat). Direct loss of habitat would result in reduced foraging habitat, fewer nesting sites and reduced brood-rearing habitat, and possible increased nest parasitism or predation due to increased edges. Indirect impacts may include displacement due to disturbance, habitat fragmentation, loss, and

alteration; reduced nesting and breeding densities; increased isolation between habitat patches; and effects on behavior (e.g., avoidance of tall structures).[72]

Impacts to breeding birds at the Stony Creek site are expected to be low as the Project Area contains relatively little undisturbed open grassland habitat. The bird species that were observed on site are common species using mostly non-grassland open habitat. Bird species are likely to habituate to Project operations and continue to occupy these habitats. Disturbance from Project construction will be limited to that which is necessary for efficient and safe construction, therefore, impacts to grassland birds are expected to be low.

6.15.3 Motion Detector Lighting (278)

We support a lighting design that uses motion detectors at buildings and turbine doors to reduce the amount of excess stray lights that may attract night migrating birds during inclement weather. (Submittal 278 – US Dept of the Interior)

Response: Where practical Stony Creek will employ motion detector lights at facility buildings.

6.15.4 Met Tower Design (278)

We also support the use of a monopole meteorological tower instead of a structure that uses guy wires. (Submittal 278 – US Dept of the Interior)

Response: The proposed meteorological tower is un-guyed to minimize danger to birds.

6.15.5 Sheldon Collision Data (063, 258, 364)

Thank you for the opportunity to comment on the DEIS for the Wind Project proposed by Invenergy. Post construction environmental study data was requested for the Sheldon Wind Farm at the August 2009 Town Board Mtg. The request was responded to by Dan Spitzer of Invenergy who was in the audience where he indicated that he would get back to us. No response was received. I again submitted a request for Sheldon's post environmental studies on January 4, 2010 during the scoping process as my letter attached indicates. I only expected that preliminary data would be shared as the wind farm has only been operating for one year and a three year study is required by NYSDEC. I again request that the Orangeville Town Board, as lead agency, obtain and add to the DEIS all post construction environmental studies even if only preliminary data is available. These studies should also be made available to the residents of Orangeville. (Attachment: C. Moultrup memo, 1 pp.) (Submittal 063 – Moultrup, Colleen; 364 – Moultrup, Colleen (verbal))

Post environmental studies have been requested multiple times over this past year. The DEIS talks about mortality rates (bats) at the Wethersfield Wind Farm that has the smaller WTG models and has only 10 turbines. To date I have not been provided with even the preliminary data from the Sheldon Wind Farm (post construction environmental and mortality data) which has been operating for more than a year under the same project sponsor. This has been

[72] FAC 2010

repeatedly requested at Town Board meetings (Aug 09) and to the project sponsor. (Submittal 258 – Moultrup, Steven)

Response: At the time of the requests by the commenter, none of the data he was requesting was available. As was agreed with NYSDEC, the first full year of post-construction monitoring at the High Sheldon Wind Farm is being conducted in the first year following the completion of reclamation. The Sheldon project began operating in March 2009, and reclamation was completed in summer 2009. Monitoring to detect post-construction mortality of birds and bats at the High Sheldon Wind Farm began in Spring 2010 and will continue through Fall 2010.

The first annual report for Sheldon post-construction monitoring studies will be completed in 2011, after the date of this FEIS. However, an interim report covering the first three months of Sheldon post-construction studies has been submitted to the NYSDEC. FEIS Section 4.17 discusses the Sheldon interim 2010 results. Post-construction data from other wind farms are summarized in DEIS Tables 17 and 18.

The preliminary Sheldon results presented in FEIS Section 4.17 indicate that bird mortality at the High Sheldon Wind Farm is similar to, or less than, what is being seen at other wind farms operating in New York. Preliminary results on bat mortality show a relatively low bat mortality rate at Sheldon compared to other New York wind farms, but studies have yet to have been done at Sheldon during the fall months when bat mortality is typically highest.

6.15.6 No Impact on Wildlife (077, 352, 369)

I have paid close attention to wildlife around windmills and have found there to be no ill effects on any wildlife. In fact the hunting is better near the windmills. (Submittal 077 – Compton, Philip)

As the surrounding wind projects have demonstrated and after the Stony Creek Wind Project is constructed and operating, the birds in Orangeville will still sing, the deer and turkeys will still graze at the foot of the turbines. (Submittal 352 – Ahl, Joe (verbal))

I travel quite a lot and I have an unfortunate habit of asking questions. I asked people in New Zealand in the north island close by Wellington, they have got cattle, they have got sheep. They also raise, strangely enough, deer. The same deer that we hunt here, they raise on ranches. And I asked them if the wind turbines bother the animals. They said no. (Submittal 369 – Kinney, Kevin (verbal)).

Response: Comments noted. An interim post-construction study at the High Sheldon Wind Farm and post-construction studies at other New York wind farms support the comments that wildlife impacts are relatively small.

6.15.7 Multiple Seasons of Wildlife Studies (132, 278)

In summary, we find that the DEIS does not contain adequate information regarding potential impacts of the project on wildlife, and additional environmental review is necessary. We find that there is insufficient or missing data regarding wind resource data and project alternatives should be reviewed to limit impacts. It appears that additional information on streams and wetlands is needed, including mitigation design options.

Our recommendation for wildlife studies at wind projects generally specifies that data be collected over multiple seasons and years to determine average annual conditions. Because of variability in migration and weather, collecting data for one year likely does not reflect typical wildlife use in the project area. Therefore we find that insufficient data currently exists to adequately conduct a risk assessment and predict wildlife mortality for this project. (Submittal 278 – US Dept of the Interior)

Since the bat and bird studies were done 3 years ago in 2007 and then updated in 2008 what plans are there to update these studies to see if there are any changes to the species that were identified? (Submittal 132 – Jensen, Paul)

Response: As discussed in FEIS Sections 4.1 through 4.16, Stony Creek completed several additional environmental studies in 2010, including studies of wetlands, eagles, salamanders, northern Harriers, and interior forest birds. Stony Creek has now completed environmental studies of the Project Area in 2007, 2008, and 2010. Further, as shown in Table 38, Table 39, and Table 40, when the Stony Creek studies are viewed in combination with the other wildlife studies that have been done in an around the Project Area, three or more seasons of data bats, raptors, and birds in general are now available.

Reports documenting the 2010 studies at Stony Creek have been provided to the NYSDEC and the US Fish and Wildlife Service, and they are included in FEIS Appendices A.4.a and A.4.b. Stony Creek is providing the 2010 information to the USFWS and will continue to consult with the USFWS regarding questions it may have related to potential impacts of the Project to federally-protected species.

Of additional note is the general lack of any established correlation between the results of pre-construction surveys on species presence and post-construction wildlife mortality at commercial-scale wind farms. Table 38, Table 39, and Table 40 demonstrate that over three seasons of pre-construction study data is available in the vicinity of the Stony Creek Project. FEIS Section 4.17 discusses available results from post-construction mortality studies conducted at wind farms in the vicinity of the Stony Creek Project.

Table 38. Bat Studies Conducted at and Near the Proposed Stony Creek Wind Farm

Study Type, location	Timing of Field Study
Bat Surveys, Sheldon	2005, Spring, Summer and Fall
Bat Surveys, Orangeville	2007, Fall
Bat Surveys, Orangeville	2008, Spring, Summer, and Fall

Table 39. Raptor Studies Conducted at and Near the Proposed Stony Creek Wind Farm

Study Type, location	Timing of Field Study
Raptor Surveys, Sheldon	2005, Spring and Fall
Winter raptor survey, Orangeville	2007/08, Winter
Raptor Surveys, Orangeville	2008, Spring and Fall
Northern Harrier survey, Orangeville	2010, Early Summer

Forest bird survey, Orangeville	2010, Early Summer
Bald eagle survey, Orangeville	2010, Early Summer

Table 40. General Bird Studies Conducted at and Near the Proposed Stony Creek Wind Farm

Study Type, location	Timing of Field Study
Phase 1 Bird Survey, Sheldon	2004, Spring
Breeding Bird Survey, Sheldon	2005, Spring
Radar Surveys, Sheldon	2005, Spring and Fall
Breeding bird Survey, Orangeville	2007, Spring
Forest bird survey, Orangeville	2010, Early Summer

6.15.8 Cobble Hill Studies (073, 258, 278, 371)

It has been reported that some areas of the project area were not surveyed and, therefore, field study may be warranted. (Submittal 278 – US Dept of the Interior)

Starting at the December 2007 Public Hearing on the Comp Plan I began to voice my concerns about the proposed wind farm. I submitted copies of laws passed by local towns that would give the Town control of projects such as this. This was ignored. I spoke at the 2009 public hearing about environmental concerns and the DEIS before you now states that environmental, wildlife, wetland, visual and aesthetic adverse effects are unavoidable. After you the Town Board read the DEIS for three weeks your response to the Stantec engineer when he asked if you had any questions was complete silence. My comments during the scoping process were also ignored so I won't expect anything different tonight.

I live in Orangeville on Cobble Hill. The hill is unique in that it is one of the highest hills in Wyoming County and also has significant surface water, federal and NYSDEC wetlands. This area has the greatest acreage of surface water totally within the Town of Orangeville and can easily be seen on maps within the DEIS. The stream that runs north from the NYSDEC wetland on Cobble Hill borders the Stony Creek wind farm project area. As you can imagine the area is home to Canada geese, wood ducks, mallards, herons, loons, hawks, bats, turkey vultures and hundreds of birds and animals associated with wetlands. I have also observed bald eagles and osprey hunting over the fish filled waters.

Of primary concern at this location is the fact that the ponds and wetlands are used by thousands of migratory waterfowl as a stopover. The hundreds of Canada geese that nest at this area fly in and out of the ponds from August through November. They usually fly back in the evening and night from the agricultural fields to the east. At the very least mitigation needs to be considered for turbine sites #1, #2 and #3. See Federal Guidelines for appropriate mitigation.

Much of this area would be considered outside of the project area but I submit that the US Fish & Wildlife in Washington has recently completed guidelines regarding preconstruction field studies for wind farms that states that the study area should include the "footprint" for the proposed facility plus an appropriate surrounding area. The extent of the study should be based on the

distribution of habitat for all identified species. Primary concern is habitat fragmentation and the potential for significant habitat impacts.

Upon reviewing the DEIS, no environmental studies have included or considered the entire North West portion of Orangeville. Upon further review of maps and studies that were conducted for the Invenergy DEIS it shows that the entire Cobble Hill area that includes proposed turbine sites #1, #2 and #3 were also ignored or excluded from the environmental studies conducted between 2007 and 2009.

These maps I studies in the DEIS include: A) Buffalo Rd Breeding Bird Survey - Spring 2007, B) Bat Survey Location Map - Stantec January 2009, C) Raptor and Bat Study - Summer and Fall 2008, D) Natural Community Aerial Map – 2005, E) Raptor Survey Location Map - January 2009

As an example I have attached a copy of the Bat Survey Location Map that indicates that the project boundary did not include the entire northwest corner of Orangeville. The Bat survey locations were located at the two Invenergy Met towers located in the middle of a field. As research has shown bats are extremely susceptible to being killed by wind turbines. Any child that has spent a week at Camp WYOMOCO can attest to the fact that there are more bats on this hill than at a met tower in an open field.

Avian studies in the DEIS seem to ignore, Cobble Hill and the Attica reservoir, the largest bodies of surface water in Orangeville. Bald and Golden eagles have also been documented at the Attica Reservoir. Given this observation I would conclude that the Stony Creek wind farm DEIS is incomplete. Complete documentation has been given to the USFWS and NYSDEC.

On April 5, 2010 the USFWS indicated that they had met with the project sponsor and indicated that they were aware of the issues as I had described above. The USFWS further stated that they had pointed out the same deficiencies and requested that the project sponsor provide additional information regarding aquatic resources in the project area. I would ask that all additional studies be made available for public review and comment after the field delineations being conducted this spring, by the project sponsor, for the entire project area are complete.

I will expect a response from Stantec regarding my concerns about the environment studies and wildlife on Cobble Hill. (Attachment: Bat Survey Location Map, 1 pp.) (Submittal 073 – Moultrup, Steven, Submittal 258 – Moultrup, Steven, 371 – Moultrup, Steven (verbal))

Response: Cobble Hill is a broad high elevation area in the extreme northwest corner of the Stony Hill Project Area, where the FEIS layout includes proposed locations for Turbines 1, 2, 3, and 4. The top of Cobble Hill includes an area approximately 1 mile wide between Standish and Gassman Roads. The commenter indicates that wildlife surveys completed for the Stony Creek project did not address the Cobble Hill area. In his three submittals, the commenter describes relatively large wetland areas on Cobble Hill. These descriptions presumably apply to the wetland areas that are on the west side of Cobble Hill and approximately ½ mile or more from the nearest proposed wind turbines. These wetlands appear as blue hatched areas in Figure 12. Construction and operation of the Project will not involve direct impacts to the wetland areas on the west side of Cobble Hill.

In 2010 Stony Creek performed three additional environmental studies that included surveys on the eastern portion Cobble Hill where direct impacts are anticipated. First, a count of forest

birds was performed that included three observation points located on Cobble Hill. This study is discussed in FEIS Section 4.7. Second, Stony Creek completed surveys for Jefferson Salamander in wooded areas where turbines are proposed. This study included walkdowns done along the route on Cobble Hill where it an access road is proposed. Potential breeding ponds for Jefferson salamander were found on the eastern side of the Cobble Hill area, but these ponds are outside of the area where Stony Creek is proposing construction. Figure 12 shows the results of salamander surveys on Cobble Hill. FEIS Section 4.1 contains more information on the 2010 salamander surveys.

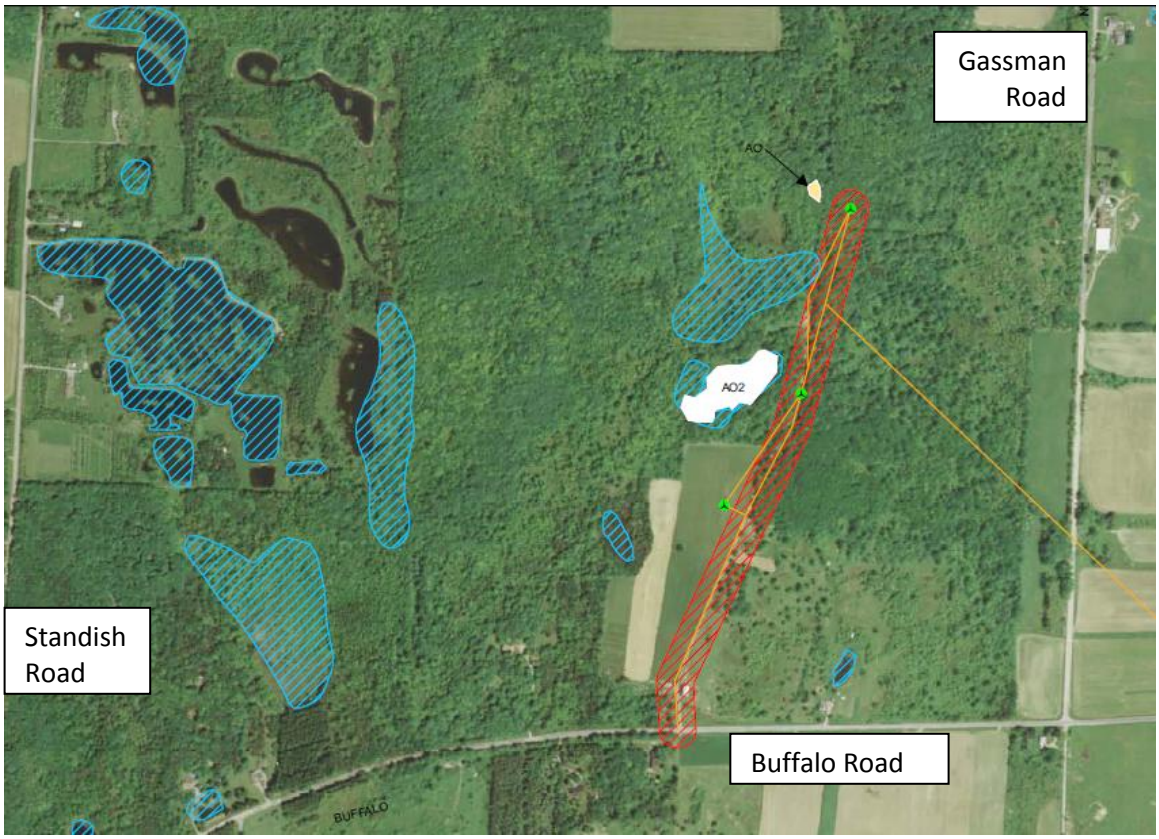


Figure 12. Jefferson Salamander Results on Cobble Hill (Shows DEIS layout)

Notes on Figure 12: Blue cross hatching shows preliminary estimates of wetland areas. Green circles show DEIS turbine locations. Orange lines show routes of cables or roads from DEIS layout. Red cross-hatchings shows target survey area (note some additional areas were also surveyed), Filled light orange areas are Jefferson salamander breeding ponds identified in the field survey.

Stony Creek has also completed wetland surveys for the portions of Cobble Hill where turbines, roads, and cables are proposed. FEIS Section 4.15 discusses wetland surveys that have been completed.

DEIS Map 4 depicts wetlands in the topographic flat just west of Cobble Hill, outside the Project Area. The 2007 Breeding Bird Survey (DEIS Appendix C3) did not include field surveys in the Cobble Hill area, but did assess data from New York Breeding Bird Atlas survey block 2274D. Cobble Hill is near the center of this survey block.

The 2007 and 2008 Bat surveys are included in the DEIS as Appendix C4 and C6. The investigations of bat activity and acoustic bat calls were based upon data gathered from detectors mounted on and near two meteorological towers in the Project Area, in accordance with existing NYSDEC guidance. These measurement locations are locations where turbines are proposed and they have habitat similar to what exists on Cobble Hill. Specifically, the "south met tower location" is a hilltop surrounded by relatively large patches of wooded areas. Cobble Hill is similarly a hilltop location with large patches of woods and some open agricultural fields.

The 2008 winter raptor and owl survey included a survey route located less than a mile to the east of Cobble Hill. Coordination with the NY Natural Heritage Program yielded data for rare biological occurrences within tens of miles of the Project Area, and therefore did include the Cobble Hill area.

Potential impacts to waterfowl are discussed in FEIS Section 6.15.9.

The pre-construction evaluations of existing data and field studies conducted by Stony Creek investigated potential impacts to birds, bats, wetlands, and aquatic life, as well as other environmental resources, in habitats near to and/or similar to the Cobble Hill area such that impacts of constructing four turbines and associated facilities on Cobble Hill are adequately addressed in the DEIS and FEIS. Studies have been performed to industry standards and in consultation with the NYSDEC. Impacts from development on Cobble Hill would be similar to those described in the DEIS and FEIS for other areas in the Project Area.

6.15.9 Waterfowl (004, 025, 033, 050, 110, 111, 112, 113, 114, 115, 116, 117, 118, 142, 152, 189, 190, 192, 193, 194, 195, 200, 203, 208, 238, 258, 262, 238, 250, 278)

Further, our area, specifically Route 20A near Krotz Road, Nesbitt Road and Route 238 is a flight pattern for geese. They fly low enough that we can hear their wings pushing against the air. They arrive here in spring, rest a bit at the Federally protected beaver pond/lake, in the back of property on Krotz Road, sometimes they stop at land on Route 20A to eat and rest before they continue their journey to their nesting places. The return trip reverses itself. However they still stop at the beaver pond/lake and they still eat in the fields in the area. Erecting industrial wind turbines in this area of Orangeville will of course be detrimental to the population of geese that use this air way as their corridor. (Submittal 200 – Makson, Paul and Linda)

My home and the surrounding area is literally a 'fly path' or 'fly pattern' for the migrating geese. You propose to erect many industrial wind turbines within the fly area of these geese. Some of them fly so low that I can hear their wings flapping in the wind. Sometimes there are dozens other times only a few. The area includes but is not limited to---Route 238; Krotz Road,; Nesbitt Road; Old Buffalo Road; Route 20A. What are your plans to protect the migrating birds? (Submittal 203 – Makson, Paul and Linda)

There are three turbines #30, 31 and 29 all within less than ½ mile from our home. We have families of Canada Geese raising their chicks on our pond, many ducks and beautiful birds. I'm concerned about the flight paths of these birds being disturbed by these turbines. No doubt the ducks and geese visit the Attica Reservoir. (Submittal 238 – Nevinger, Mary)

The Attica Reservoir is the largest body of surface water that lies adjacent to and in part within the Stony Creek wind farm project area. It is located on the north border of the Town of Orangeville and provides drinking water for the Village of Attica.

Twenty-eight wind turbines are proposed to the south of the reservoir. Six (6) turbines are proposed closer than 3000 feet from the reservoir according to the DEIS Map #4 (Wetlands and Streams). Obviously, all turbines are proposed for ground higher than the reservoir thereby making their height effectively taller.

Three primary concerns that need to be thoroughly addressed in the DEIS :

1) The glide-path and take-off angles for migratory birds arriving and leaving the Attica reservoir that would thereby place the birds at peril. Angles that likely vary by species, and

2) Landing and takeoff directional patterns unique to the Attica reservoir, and;

3) Bird count studies that are conducted during regular migratory periods and at locations applicable to the Attica reservoir. Since this is not accomplished, it is my belief that the environmental impact study is incomplete.

(Submittals 004 – Humphrey, Peter; 025 –Raab, Sherri; 033 – Major, William; 050 – Hopkins, Harold; 110 – Donohue, James; 111 - Malark, Michael; 112 – Kibletz, Christopher; 113 – Carrick, George; 114 – Snyder, Allen; 115 – Piontkowski, Ronald; 116 – Dusterhus, Matthew; 117 – Stock, J.; 118 – Piazza, Richard; 142 - Dickinson, Darryl; 152 – Dickinson, Mary; 189 – Gebel, James; 190 – Gordon, Don; 192 – Clark, Kevin; 193 – Clark, Shirl; 194 – Bonner, John; 195 – Aprial, Pete; 208 – Makson, Paul; 258 - Moultrup, Steven; 262 – Moultrup, Colleen; 238 – Nevinger, Mary; 250 – Nevinger, James)

Of particular note (in CS00 data) is the high level of waterfowl activity in the northern portion of the Town at certain times of the year. Observations have shown patterns of movement between various water bodies and agricultural fields where feeding occurs. We did not see mention of this pattern in the DEIS nor did we see an analysis of potential impact to birds from turbines that may be sighted between or among these areas. This information should be added to the report. (Submittal 278 – US Dept of the Interior)

Response: The commenters raise the issue of adverse effects to waterfowl and related species which use the Attica Reservoir. Available literature indicates waterfowl collisions with wind turbines and tall structures like communications towers are uncommon[73],[74]. In 2001, a report was prepared summarizing available avian fatality statistics from operating wind farms,

[73] Erickson, W., G. Johnson, M. Strickland, D. Young, K. Sernka, R. Good. 2001. Avian Collisions with Wind Turbines: A Summary of Existing Studies and Comparisons to Other Sources of Avian Collision Mortality in the United States. National Wind Coordinating Committee, Washington, D.C.

[74] Kerlinger, P. 2004. Phase 1 Avian Risk Assessment for the Forward Energy Center, Dodge and Fond du Lac Counties, Wisconsin. Unpublished technical report prepared for Invenergy Wind LLC, Chicago, IL.

including a breakdown of fatalities by species type. The report found that waterbirds and waterfowl made up 1.6% and 2.5% of the avian fatalities respectively. [75]

Even in situations where substantial numbers of waterfowl inhabit areas close to turbines, collision mortality is low.[76], [77], [78]. This conclusion was reinforced in the reported results after two years of post construction monitoring at the Forward Wind Farm in Wisconsin. This 86-turbine facility is located in agricultural fields approximately 3 miles from the 32,000-acre Horicon Marsh, an area known internationally for its exceptional waterfowl habitat and concentrations of waterfowl. The largest freshwater marsh in the US, Horicon supports some 250,000 Canada geese and 100,000 ducks during migration. Studies designed in coordination with the US Fish and Wildlife Service and the Wisconsin Department of Natural Resources, and conducted in 2008 and 2009, found no waterfowl fatalities at the wind farm.

Low waterfowl mortality at tall structures is thought to be due in part to the bird's ability to see the structures. Radar studies have shown waterfowl can detect turbines from 1 km away.[79]

Similarly, the risk of mortality to other waterbirds (e.g., wading birds) is low, as these species are rarely documented in mortality studies at wind farms. For example, the two years of post-construction monitoring at the Forward Wind Farm (described above), found only a single shorebird – a killdeer, perhaps the North American shorebird least associated with open water/shoreline habitat.

For these reasons, waterfowl and shorebird mortality at Stony Creek is expected to be low.

The reasonably conceivable level of mortality associated with Stony Creek would be far below what could be considered biologically significant. Compare, for example, potential wind farm fatalities with losses resulting from hunting, which is carefully managed by state and federal regulators. In 2008, New York hunters harvested 163,330 Canada geese. By comparison, if in any one year, Stony Creek caused the deaths of 10 Canada geese, this loss would equate to 0.006 % (6 one-thousandths of 1 percent) of hunting losses in the state. New York is part of the Atlantic Flyway, which also includes 16 other east coast states. There were 996,677 Canada Goose harvested in the Atlantic Flyway in 2008.[80]

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[75] Erickson, W., et al, 2001.

[76] Howe, R., W. Evans, and A. Wolf. 2002. Effects of Wind Turbines on Birds and Bats in Northeastern Wisconsin. Unpublished technical report prepared for Wisconsin Public Service Corporation, and Madison Gas and Electric Company.

[77] Johnson, G., W. Erickson, J. White, and R. McKinney. 2003. Avian and bat mortality during the first year of operation at the Klondike Phase I Wind Project, Sherman County, Oregon. Unpublished report prepared for Northwestern Wind Power.

[78] Pettersson J., Waterfowl and Offshore Wind Farms: A study in southern Kalmar Sound, Sweden, Spring and Autumn Migrations 1999-2003 (noting that "Observations in this study of 1.5 million migrating waterfowl have only recorded one fatal collision. Collisions do concur, but they are extremely rare."), at http://www.wind-energie.de/fileadmin/dokumente/Themen_A-Z/Vogelschutz/Voegel_Offshore_Sweden_kurz.pdf.

[79] Tulp, I., H. Schekkerman, J.K. Larsen, J. van der Winden, R.J.W. van de Haterd, P. van Horssen, S. Dirksen, and A.L. Spaans. 1999. Nocturnal flight activity of sea ducks near the wind farm Tuno Knob in the Kattegat. Bureau Waardenburg bv and Institute voor Bos-en Natuuronderzoek (IBN-DLO).

80 Raftovich, R., K. Wilkins, K. Richkus, S. Williams, and H. Springs. 2009. Migratory bird hunting activity and harvest during the 2007 and 2008 hunting seasons. US Fish and Wildlife Service, Laurel, MD.

6.15.10 Black Duck (256)

Photos were submitted with Comment 256 in Section 3.5.4-2 to document presence of black duck and owl in Buffalo/Standish Road area. (Submittal 256 – Lomanto, Ron and Lynn)

Response: Comment noted.

6.15.11 CSOO Observations of Birds (263, 276, 278)

Upon review of the Invenergy DEIS it is clear that the entire footprint of the project was not included in the wildlife studies for the DEIS. As USFWS draft guidelines indicate adjacent wetlands should also be included based on the distribution of habitat for the species of habitat fragmentation concern and the potential for significant adverse habitat impacts, including displacement.

A group of concerned citizens in Orangeville have spent the last two months documenting plants and wildlife in the project area and its adjacent wetland areas under the guidance of independent experts in the field of wildlife studies. Members of the group have photographed and documented an extensive list of both plants and wildlife that occur here in Orangeville for review. The documents, photographs and field studies have been provided to Tim Sullivan, Region #5 USFWS and the NYSDEC.

Plants and wildlife that have been documented in Orangeville and of primary concern include:

ENDANGERED	*THREATENED:*	*EXPLOITABLY VULNERABLE:*	*SPECIAL CONCERN:*
Golden Eagle	*Upland Sandpiper*	*SquawRoot*	*Cooper's Hawk*
Northern Shrike	*Bald Eagle*	*Canada Lily*	*Horned Lark*
Short-Eared Owl		*Ginseng*	*Jefferson Salamander*
Wild Leeks		*Butternut*	*Blue Spotted Salamander*
Sky Blue Aster		*Bloodroot*	*Wood Turtle*
White Bone Set		*Turtle Head*	
Angelica			
Blue Eyed Mary			
Wild Onion			

The documentation and field study that was compiled over the past two months by citizens in Orangeville concerned about our wildlife is quite extensive and clearly show that the DEIS wildlife studies for the Stony Creek wind farm are far from complete. Orangeville citizens deserve

environmental/wildlife studies as comprehensive as those completed for similar projects in Bliss, Wethersfield and Sheldon. Will the Orangeville Town Board accept a DEIS that was cut and pasted from other projects? (This question was asked by a USFWS staff member). (Submittal 263 – Moultrup, Steven)

It is important to note that citizens living in the project area (i.e. Clear Skies over Orangeville) have monitored wildlife activity over the past few years. We have been provided data that highlights avian, mammalian, reptile and amphibian occurrence in various areas in the town of Orangeville and believe that this information should be considered alongside any data collected by consultants for this project. (Submittal 278 – US Dept of the Interior)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

As a resident of the Town of Orangeville and member of Clear Skies Over Orangeville I would like to express concern for the Stony Creek Wind Turbine Project on behalf of Clear Skies Over Orangeville membership and other concerned residents and citizens of Wyoming County. This membership has put together a book of endangered and threatened species within the Stony Creek Project area. It is a two month long cooperative data and mapping collection which has recorded, photographed, identified and marked locations of the endangered and threatened wildlife, avian, botanicals, topographic and geological concerns. We are submitting to the Town Board of Orangeville in respect to the DEIS comments and documentation of the endangered species and geological concerns.

At present we have met with the United Department of Fish and Wildlife and plan to discuss our findings with the New York Department of Environmental Conservation. Discrepancies and negligent assumptions and reference to similarities in geographic location delineated and totally ignored the delicate environmental balance of our area. We need to preserve our wildlife, botanical, avian and bats. Once we disturb them we will not only loose our quality of life, we will lose the extremely unusual and valuable environment we, our children and grand children enjoy.

I am requesting that a more comprehensive two to three year study be done to further examine the sensitivity of our habitat. The Department of Environment Conservation and The US Fish and Wildlife Department also need to conduct studies to further document and complete research which was not included in the Scoping or DEIS. Therefore, on behalf of the citizens in Orangeville who participated in their own environmental impact study, I am requesting more studies be done before the determination if any permit for Invenergy should even be decided upon. (Submittal 276 – Lomanto, Lynn)

The following birds are on the special concern and threatened listing for the most part, and are known to nest on the ground and also return to the same territory or nesting sites annually.

Northern Harrier	*ground nest*	*1 male will defend nests of two females returns annually*
Cooper's Hawk	*tree nest*	*returns annually*
Horned Larks	*ground nest*	*Grasslands*
Vesper Sparrow	*ground nest*	*open dry grasslands*
Upland Sandpiper	*ground nest*	*hayfields, opening in forest*
Grasshopper Sparrow	*ground nest*	*Grasslands*
Henslow's Sparrow	*ground nest*	*Grasslands*

As listed above, all but two species are ground nesting birds needing grasslands for nesting. The problem is that the wind turbines will have a tremendous impact on these grasslands resulting in a major increase in death rates of these birds. This will be a direct result from the construction of these turbines and the day to day operation and impacts of the turbine blades.

As you can see the Town of Orangeville has many documented threatened and special concern birds. These species are not contained in just one area of Orangeville, but equally distributed in the north, south, east, west and middle of this township. We need to protect these few remaining bird species that are part of Orangeville's unique terrain and habitat. These species are drawn to this area for these reasons. The impacts could and would be significant in these sensitive areas, which his all of Orangeville. (Submittal 276 - CSOO - Lomanto, Lynn)

The NYSDEC laws were put in place to be enforced to protect the environment and related concerned species. We hope that they will do there (sic) laws!

We started to birdwatch in Orangeville in January 2010. Studying what birds we seen, amount, locations and weather. Then putting it on a big map so we can study what and where we have seen birds. We also started to put the locations of birds nests on the map. These nests are from the spring and summer of 2009.

We know that the town has a lot of large hay fields. We are very concerned about when the farmer starts cutting their hay fields, that's when gulls, vultures, hawks and owls come in to feed. Most of these fields are in close proximity to where these turbines are proposed for construction. With the wind turbine spinning at about 168 mph, we are looking at a lot of bird kills. The most farmers do 3-4 cuttings per year. That could mean a lot of bird deaths. We truly feel that a study should be conducted on how to protect these birds from mass killing, especially during their feeding times in these fields and their flight routes to and from these fields.

[Submittal 276 comments on waterfowl]

This area that the above birds were seen at is almost in the very middle of Orangeville. As you can see, the Tundra Swans and Snow Geese and Canadian Geese all use this area. If the wind turbines go up in this area or any of the areas we are looking at mass killing of these birds. More studies need to be done so we can locate these birds fly paths.

One of the most interesting things about this are that the NYSDEC were banding Canada Geese at this address, so the NYSDEC must know about the geese flying in and out of the Orangeville area which means that more study is needed to find out what fly ways are being used before any building of these wind turbines so we don't have mass killing. Please see pictures of NYSDEC. [The submittal contains pictures provided of NYSDEC employees banding geese.]

[Submittal 276 comments on Eagles]

The eagles aren't nesting there but spend a good part of the day there. It would be like putting birds through a meat grinder specially night migrating. (Submittal 276 - CSOO - Lomanto, Lynn)

[Submittal 278, summary of species identified]

Birds	***Birds (cont)***	***Reptiles/Amphibians***	***Plants, cont.***
American Robin	*Killdeer*		*Night Shade*
American Toad	*Kingbird*	*Bullfrog*	*Ostrich Fern*
American Toad with eggs	*Magnolia Warbler*	*Gater Snake*	*Peppermint*
American Tree Sparrow	*Mallard Duck*	*Gray Tree Frog*	*Pineapple Weed*
American Wigeon	*Mink*	*Green Frog*	*Queen Annes Lace*
American Woodcock	*Mourning Dove*	*Jefferson Salamanders*	*Red Clover*
Bald Eagle	*Northern Cardinal*	*Milk Snake*	*Rock Sandwort*
Baltimore (Norhtern) Oriole	*Northern Goshawk*	*Northern Red Belly Snake*	*Rue Anemones*
Barn Swallow	*Northern Harrier*	*Northern Spring Salamanders*	*Shepherd's Purse*
Barred Owl	*Northern Shrike*	*Painted Turtle*	*Sky Blue Aster*
Belted Kingfisher	*Painted Turtles*	*Red Backed Salamanders*	*Squawroot*
Black and White Warbler	*Paraying Mantis*	*Snapping Turtle*	*St. Peterwort*
Black Capped Chickadee	*Peregrine Falcon*	*Spotted Turtle*	*Stiff Aster*
Black Ducks	*Phoebees*	*Spring Peepers*	*Stinging Nettle*
Black Swallowtail Butterfly	*Pileated Woodpecker*	*Two Lined Salamanders*	*Stinking Benjamin*
Blue Jay	*Pine Siskins*	*Water Snake*	*Sweet Joe Pyeweed*
Bobolink	*Purple Finch*	*Wood Frog*	*Tall Buttercup*
Broad Winged Hawk	*Red Bellied Woodpecker*	*Wood Turtle*	*Tansy*
Brown Creeper	*Red Breasted Nuthatch*	*Tadpoles*	*Teasel*
Brown Headed Cowbird	*Red Eyed Vireo*	***Insects***	*Trout Lily*
Bufflehead	*Red Shoulder Hawk*	*Tiger Swallowtail Butterfly*	*Turtleheads*
Canadian Geese	*Red Squirrel*	***Plants***	*Vetches*
Catbird	*Red Tailed Hawk*	*Alfalfa*	*White Boneset*
Cedar Waxwing	*Red Winged Blackbirds*	*Angelica*	*White Heath Aster*
Chestnut Sided Warbler	*Ring Billed Gull*	*Bed straw*	*Wild Leeks*
Chipping Sparrow	*Ring Necked Pheasant*	*Bloodroot*	*Wild onion*
Common Crow	*Robin*	*Blue Cohosh*	*Wild Strawberry*
Common Grackles	*Rock Doves*	*Blue Eyes Mary*	*Winter Cress*
Common Redpoll	*Rose Breasted Grossbeak*	*Bull Thistle*	*Wood Anemone*
Cooper's Hawk	*Rough Legged Hawk*	*Burdock*	
Cottontail Rabbit	*Ruby Throated Hummingbird*	*Butter and Eggs*	
Cowbird	*Ruffled Grouse*	*Butternut*	

Birds	Birds (cont)	Reptiles/Amphibians	Plants, cont.
Crows	Sharp Shinned Hawk	Canada Lily	
Damselfly	Short Eared Owl	Chicory	
Dark Eyed Junco	Slate Colored Junco	Cleavers	
Downy Woodpecker	Snow Bunting	Coltfoot	
Eastern Bluebird	Snow Geese	Common Cattail	
Eastern Kingbird	Song Sparrow	Common Flax	
Eastern Phoebe	Starling	Common Molkweed	
Eastern Screech Owl	Summer Tanager	Common Mullin	
Eastern Towhee	Tree Swallow	Common Plantain	
Evening Grossbeak	Tufted Titmouse	Common Purslane	
Fox Sparrow	Tundra Swans	Common Ragweed	
Golden Crowned Kinglet	Turkey	Corn Cockles	
Golden Eagle	Turkey Vulture	Curly Docks	
Grasshopper Sparrow	Upland Sandpiper	Dandelions	
Gray Squirrel	Vesper Sparrow	Deptford Pink	
Gray Tree Frog	Whip poor will	Fireweed	
Great Blue Heron	White Breasted Nuthatch	Fox Grapes	
Great Crested Flycatcher	White Crowned Sparrow	Gill over the Ground	
Great Egret	White Tailed Deer	Ginseng	
Great Horned Owl	White Throated Sparrow	Goldthread	
Green Darner	White Winged Crossbills	Hawk weed	
Green Frog	Wild Turkey	Heal All	
Green Heron	Wood Ducks	Indian Pipe	
Hairy Redpoll	Wood Thrush	Iron Weed	
Hairy Woodpecker	Yellow Bellied Sapsucker	Jack in the pulpit	
Hawk	Yellow Shafted Ficker	Jewel Weed	
Henslow's Sparrow	Yellow Shafted Northern Flicker	Marsh Marigold	
Herring Gull	Yellow Throat	Mayapple	
Horned Larks	Yellow Warbler	Meadow Rues	
House Finch		Moneywort	
House Sparrow		Motherwort	

Response: Thank you for summarizing your wildlife observations in the Project Area. FEIS Appendix A.4.i is a list of all the wildlife observations noted in the submittals by Clear Skies Over Orangeville (CSOO). The CSOO lists include:

- 6 species of insects,
- 8 species of mammals,
- 10 species of amphibians,
- 9 species of reptiles,
- 75 species of plants, and
- 121 species of birds.

In general, the CSOO observations include many common species (e.g., Cottontail rabbit, Whitetail Deer, American Toad, Garter Snake, American Robin, Dandelion, and Poison Ivy) and do not indicate a level of wildlife use that is different from that in other areas in Wyoming County, New York where wind turbines are installed in operating: the Towns of Sheldon,

Wethersfield, and Eagle. Wildlife mortality from wind turbine in these towns has been relatively low as discussed in FEIS Section 4.17. The CSOO observations are also consistent with the findings of the pre-construction studies performed by Stony Creek and documented in the DEIS and FEIS.

The CSOO submittals contain multiple mentions of the project creating mass killings of birds, however, no documentation was provided. As discussed in the DEIS and this FEIS, post-construction studies at actual wind farms have shown that bird mortality from wind farms is approximately 2.0 birds/MW/year.[81] And as discussed in FEIS Section 6.15.9, experience at actual wind farms is that waterfowl tend to avoid wind turbines. The commenter's suggestions of mass killings of birds are unsupported by the submission and inconsistent with actual experience and data.

CSOO observations of mammals are discussed in FEIS Section 6.18.2.

CSOO observations of amphibians and reptiles are discussed in FEIS Section 6.18.1.

CSOO plant observations are discussed in FEIS Section 6.13.5.

Risk to waterfowl is discussed in FEIS Section 6.15.9.

Submittal 276 lists 18 state-listed bird species that have reportedly been observed in the Project Area. For many of these species, there are no specific records on an observation of the species in the Project Area. Nonetheless, each species is addressed in FEIS Section 6.19. Table 41 lists all of CSOO-identified state-listed bird species, those that were also identified by Stony Creek in its surveys and the locations in the FEIS where the species is discussed further.

Table 41. State-Listed Bird Species Identified by CSOO

Conservation Status	# Species Observed by CSOO	Species Observed by Stony Creek	Species Not Observed by Stony Creek
Federal – Endangered	0	Na	Na
Federal – Threatened	0	Na	Na
State-Endangered	4	[none]	Golden Eagle (6.19.2, see 6.18.3 for more information on the reported CSOO observation of this species), Northern Shrike (6.19.4), Peregrine Falcon (6.19.5), Short-eared Owl (6.19.3)
State-Threatened	4	Bald Eagle (6.19.1), Northern Harrier (6.19.2)	Henslow's Sparrow (6.19.10) Upland Sandpiper (6.19.15)
State-Special Concern	11	Cooper's Hawk (6.19.7), Grasshopper Sparrow (6.19.16), Horned Lark (6.19.9), Osprey (6.19.19), Vesper Sparrow (6.19.17), Sharp-shinned Hawk (6.19.8)	Northern Goshawk (6.19.11), Whip-poor-will (6.19.12), Red-headed Woodpecker (6.19.14), Red-shouldered Hawk (6.19.16) American Bittern (6.19.13)

[81] Wind Turbine Interactions with Birds, Bats, and their Habitats: A Summary of Research Results and Priority Questions, National Wind Coordinating Collaborative, Spring 2010. Available at www.nationalwind.org.

6.15.12 Red-Tailed Hawk Nest (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

We are noticing a large amount of Red Tailed Hawks in the Town of Orange. We really feel that a nest study needs to be done before the building of the wind turbines. We have found two (2) red tailed hawk nests so far. We have seen red tail hawks flying where the wind company wants to put these turbines up. Our concern is not so much the hawk not seeing these huge things but the hawk not seeing them when it is going after prey. We know that the red tailed hawk will keep its eyes fixed on its prey and not notice anything else. This is true with all hawks and owls. We cannot afford to keep killing these wonderful birds. We have enough wind turbines in this part of the state. In the report it talks about the height of the blades on the wind turbines but very little about the height from the bottom of the blade to the ground. We are very concerned about this measurement because the red tailed hawk flies within that distance.

This is one that has a red tailed hawk nest that really needs to be looked at before construction of the wind turbines. There is a hawk (what we believe is a red tail hawk) that has lived and raised several generations of young hawks in the tree indicated on the above map. [Submittal 278 includes a map indicating a nest located on a property north of Route 20A, west of Mengs Road, and approximately 1,200 feet west of the proposed location for DEIS turbine T-06.]

Response: Red-tailed Hawk is the most common and widespread buteo in North America.[82] The species is not federally or state listed, nor is it on the NYSDEC list of Species of Greatest Conservation Need (SGCN). It is however, protected by the Migratory Bird Treaty Act. Notwithstanding there is no specific protection due this species, and the DEIS and FEIS outline mitigation measures that will limit impacts to all species. Potential impacts of the Project to species such as Red-tailed Hawk are discussed in DEIS Section 3.5.3.

Red-tailed Hawk in the Project Area

Stony Creek conducted breeding bird surveys in accordance with NYSDEC protocols in 2007, 2008, and 2010. In these surveys Red-tailed Hawks were the most commonly sighted raptors. (Note: the reports note that more Turkey Vultures were seen than Red-tailed Hawks, but technically, Turkey Vultures are not categorized as raptors). In total, during three years of bird surveys at the Project Area, up to_19 Red-tailed Hawks were observed, with the number of individuals likely being less because of multiple sightings of the same individual. Sightings of Red-tailed Hawk by Stony Creek were:

- 4 sightings in Spring 2007, all of individuals flying above the project area at elevations above 50 m (164 feet) and higher above ground level. Two of these were seen from points in agricultural fields; two were seen from points near field edges.
- Several sightings of 2 individuals in winter 2008 (January, February, and March 2008).

[82] U.S. Department of the Interior, Bureau of Land Management, brochure on Snake River National Conservation Area.

- 5 sightings in Spring 2008 (from April 19 to May 27, 2008), seen from an elevated field off of Nesbitt Road. All five were of soaring hawks.
- 5 sightings in Fall 2008 (from September 13 to October 21, 2008).
- No sightings were made incidentally or as part of point count surveys conducted in Spring 2010 (April, May, and June 2010).

Red-tailed Hawks have also been documented in the region by surveys completed as part of the Christmas Bird Counts between 1996 and 2007. Thus, studies confirm that Red-tailed Hawk is a relatively common species in the Project Area. Some low numbers of Red-tailed Hawks may be impacted by the Project, but because this species is relatively common in the area, impacts to the Red-tailed Hawk population are not expected be significant.

Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

CSOO-Reported Red-Tailed Hawk Nest

The red circle in Figure 13 shows the location where the CSOO submittal reports a Red-tailed Hawk nest. This location is approximately 1,200 feet from the proposed location of turbine T-7 (note the figure uses the DEIS ID of T-06). In May 2011, a Stony Creek observer inspected the area where the Red-tailed Hawk nest is reported by CSOO to document any nests in the area. No nests were observeded during this visit.

If a nest were present in the area circled in Figure 13, Red-tailed Hawks in the nest would not likely be disturbed by Project construction because the 1,200 feet between the turbine site and the tree includes a wooded area that will not be affected by Project construction (the yellow circle in Figure 13 is the area that would be directly impacted by construction).

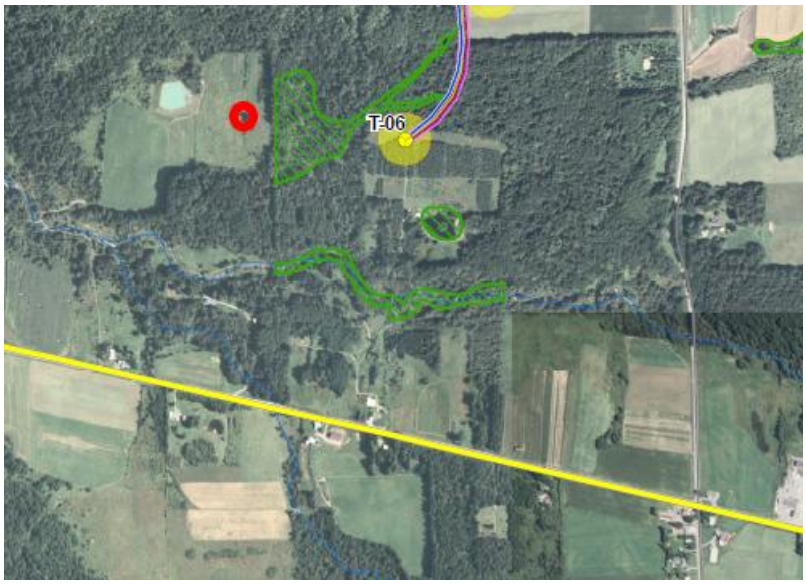

Figure 13. Reported Location of Red-Tailed Hawk Nest on Citizen Datasheet

6.15.13 Migratory Flight Routes (337)

Project will disrupt migratory bird flight routes between the Great Lakes increase avian mortalities. (Submittal 337 – Ramsey, Gerald and Donna)

Response: The comment does not provide any evidence to support its claim, and it is inconsistent with available information. A desktop review summarized in the DEIS identified and evaluated 16 recent radar studies conducted in the vicinity of Wyoming County on agricultural plateaus of western and central New York. These radar studies provided detail information on nocturnal migration of birds at nine locations on the Appalachian Plateau and in locations geographically similar to the Project Area. These studies demonstrate the broad front movement of migratory species and evaluated flight height in relationship to the proposed turbine tip heights of 120 and 125m (394 ft – 410 ft). The average flight height observed in these studies ranged between 154m and 609m (505 ft – 1998 ft). At the locations studied in Wyoming County, the percentage of targets below turbine tip height ranged from 3 to 19%.

Pre-construction surveys have not identified migration patterns in the Stony Creek area that are any different from what was noted in other areas of Wyoming County. Thus, it is reasonable to expect mortality to migrating birds will be similar to what has been occurred at other wind farms in Wyoming County. FEIS Section 4.17 summarized avian mortality rates at Wyoming County.

6.15.14 Insect-Eating Birds (200)

Birds such as the Least Fly Catcher, a very appropriate name; the barn swallows, and so on, each consume flying insects thus allowing us humans a safer environment. (Submittal 200 – Makson, Paul and Linda)

Response: Comment noted.

6.15.15 Forested Habitat Clearing (382)

Forest raptors such as Cooper's hawk and sharp-shinned hawk are resident breeders within and around the project area, and several of the proposed turbine locations are in the wooded areas where these birds nest. The chance that a resident raptor encounters a turbine is greater than for a migrant raptor that spends no more than a few days in the project area each year. Very few or no studies have specifically looked at the impact of wind projects on forest-nesting raptors, and at this time it is unknown if resident raptors are at greater risk of collision than migrants. However, to reduce the potential for disturbance and negative impacts to forest-dependant species, the placement of turbines, access roads, collection lines and other project components in forested habitat should be minimized to the extent possible. (Submittal 382-NYS DEC)

Response: Stony Creek has minimized location of turbines, roads, and cables in forested areas to the extent practicable. As discussed in FEIS Section 6.14.1 less than an quarter of the wind turbines are located in forested areas. And the layout in the FEIS includes changes designed to minimize impacts to forested areas. For instance, FEIS adjustments include relocating turbines T-57 and T-58 outside of the forested area in which they were originally proposed. Such moves minimize forest impacts from turbines, roads, and cables.

6.15.16 American Thinker Article on Raptor Impacts (097)

[In reference to a February 15, 201 article in American Thinker, a daily internet publication, the commenter asked] Is this true? (Impacts on raptors.) (Attachment: American Thinker article, 3 pp.) (Submittal 097 – Dylag, M.)

Response: The article submitted with this comment addresses various issues including abandoned and derelict wind turbines in Hawaii and California, federal incentives for wind farms during the 1980's, raptor mortality at a California wind farm, and the nature of power produced by wind turbines. These issues are outside the scope of the EIS for the Stony Creek Wind Farm.

6.15.17 Review of Study Reports (291)

DEIS P 81, paragraph 2: "all studies"? Were all studies reviewed? (Submittal 291- ABR)

Response: The last sentence of the subject paragraph was worded incorrectly in the DEIS. It should have read: The areas assessed in the four surveys and the desktop review identified in the bullet list above, are described below.

6.15.18 Radar Altitude Data (291)

DEIS P 81, Nocturnal Migrating Birds: see ABR's comments on the interpretation of radar data in Appendix C2 -flight altitude data from Cooper and Mabee should be removed from this table because it is not comparable. (Submittal 291- ABR)

DEIS Appendix C.2, Initial Review, Appendix A, Table 1. Please see previous note on this subject, need to remove all info on flight alts from the Fall 1998 studies because the radar used to obtain these measurements is not comparable to that used to collect the surveillance information. (Submittal 291- ABR)

Response: Comment noted. Rows 1 and 2 of the table include data not comparable with other data in the table.

6.15.19 Bird Migration Rates at Sheldon and Wethersfield (291)

DEIS P 82, first paragraph after table: ABR disagrees with this statement. A review of Table 16 shows that passage rates, in fact, are not the same between High Sheldon and Wethersfield during both seasons. They are somewhat similar during fall but are nearly 3X higher at Wethersfield during spring. The reasons for the differences, however, are difficult to determine - but several possibilities exist including annual variation (i.e., the studies were conducted during different years), differences in sampling intensity, methods, to name a few. (Submittal 291- ABR)

Response: The Lead Agency concurs with the comment in that the 2006 passage rates at Wethersfield were higher than the 2005 passage rates at Sheldon, and annual variations could very likely explain the difference. However, the data are consistent between the two sites in that they depict an average nocturnal migratory flight height well above the rotor swept area. Average flight height at High Sheldon was approximately 3.4 times the proposed maximum blade height at Stony Creek. Likewise, the average flight height was approximately 2.7 times the proposed maximum blade height at Stony Creek (assuming use of the GE 1.6-100 turbine). This tendency – for average flight height to be well above the typical rotor swept area – is noted in each of the studies summarized in Table 1 of Appendix C.2 of the DEIS.

6.15.20 Raptor Collision Risk (278)

We note that although no radar survey was conducted for this site, two studies at adjacent projects reveal that a high percentage of biological targets flew within and below the turbine rotor swept zone height at the Wethersfield project located south of Stony Creek. Approximately 19 percent of the targets flew below turbine height during the spring. Additionally, spring and fall visual surveys for migrating raptors in the project area revealed a high percentage flying below turbine height with 94 percent in spring and 81 percent in fall flying below 426 feet above ground level. This information indicates that higher than typical turbine induced mortality to raptors may occur at this site. We recommend the Town condition project approval with provisions for modifying turbine operation if post-construction monitoring indicates mortality higher than other projects in the region. (Submittal 278 – US Dept of the Interior)

Response: Pre-construction flight heights and mortality rates for raptors at New York wind projects are discussed in FEIS Section 6.15.21. Because the frequency of raptors observed in the Project Area is lower than at other similar nearby wind farms (DEIS Appendix C6), and because to-date no significant raptor mortality has been found at New York wind projects, substantial raptor mortality is not expected at Stony Creek. The correlation, if any, between mean raptor flight height, and the magnitude of raptor mortality at wind farms has not been established. Adaptive management for raptor collisions is discussed in FEIS Section 6.17.5.

6.15.21 Binoculars Used for Raptor Surveys (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.2.1, second paragraph, Page 26: Please provide details of the optics. (Submittal 291- ABR)

Response: The raptor biologist used Leica binoculars (8x32), a top binocular brand, during the raptor surveys.

6.15.22 Estimating of Raptor Flight Heights (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.2.2, fourth bullet item, page 27: I think it is impossible for an observer to estimate these slightly different flight altitudes at nearly any distance from the observer, let alone out to 1,000m. (Submittal 291- ABR)

DEIS Appendix C6, Spring Migration Surveys, Section 3.3, fourth paragraph, page 30: This is false precision to say that you can estimate this accurately - it's only a difference of II m. It would have been better to simply estimate the actual flight altitudes of raptors then summarize the data into these categories after the fact. (Submittal 291- ABR)

DEIS Appendix C7, Fall Migration Surveys, Executive Summary, third paragraph, page E2: Very difficult to estimate flight altitudes > 1 km from the observer ... especially with any accuracy. I don't think this is a useful value for this reason (Submittal 291- ABR)

DEIS P 84, first paragraph after bullet items: see ABR's concerns about how the flight altitude data was collected in Appendices C6 & C7 (provided at the end of this letter). (Submittal 291- ABR)

Response: The commenter is correct that accuracy of the survey may have been better represented by grouping the heights into more qualitative categories, so that a false sense of precision was not implied. As indicated in the methods section of the raptor migration report, all flight altitudes were provided as the trained observer's best estimate and they are considered estimates only. The raptor biologist was trained in assessing raptor flight heights and had previous experience observing raptors flying by tall structures with known heights such as communication towers, meteorological towers, and turbines at an existing wind farm. It is recognized that the further out from the observer that birds were observed, the more difficult it became for the observer to estimate flight heights. For this reason only birds within the 1 km buffer of the observers were included in the analysis of which birds occurred above or below the proposed turbine height.

6.15.23 Raptor Flight Heights (291)

DEIS P 90, second paragraph under Operational lmpacts to Birds: The statement is generally true ... but there are some important caveats. There are sites in CA with modern turbines where raptor fatalities have been much higher than expected. It's also important to note that the very high percentages of raptors within or below the rotor swept area is not what has been found at the majority of preconstruction wind sites. More caveats & detail are needed in this paragraph. (Submittal 291- ABR)

Response: Table 5 of Appendix C to DEIS Appendix C.6 lists results of pre-construction raptor surveys at several east coast wind power sites, including 18 studies where data was available on the percentage of raptors observed flying below the planned turbine tip height. Figure 14 shows this data in graphic form. On average, the 18 studies found that 68% of the observed raptors were flying below the turbine height. This average includes three results that stand out as lower than the others. The majority of the results fell in the range of 69% to 85% below the tip height. This data shows that at eastern U.S. wind sites it is typical for pre-construction surveys to find a high percentage of observed raptors to be below the planned turbine height.

Furthermore, comparison of post-construction raptor fatality data to pre-construction use and flight height data indicates that raptor fatality at operating projects in New York is low even if there were a large percentage of raptors observed below turbine height in the pre-construction studies. This information is presented in FEIS Section 4.17.3.

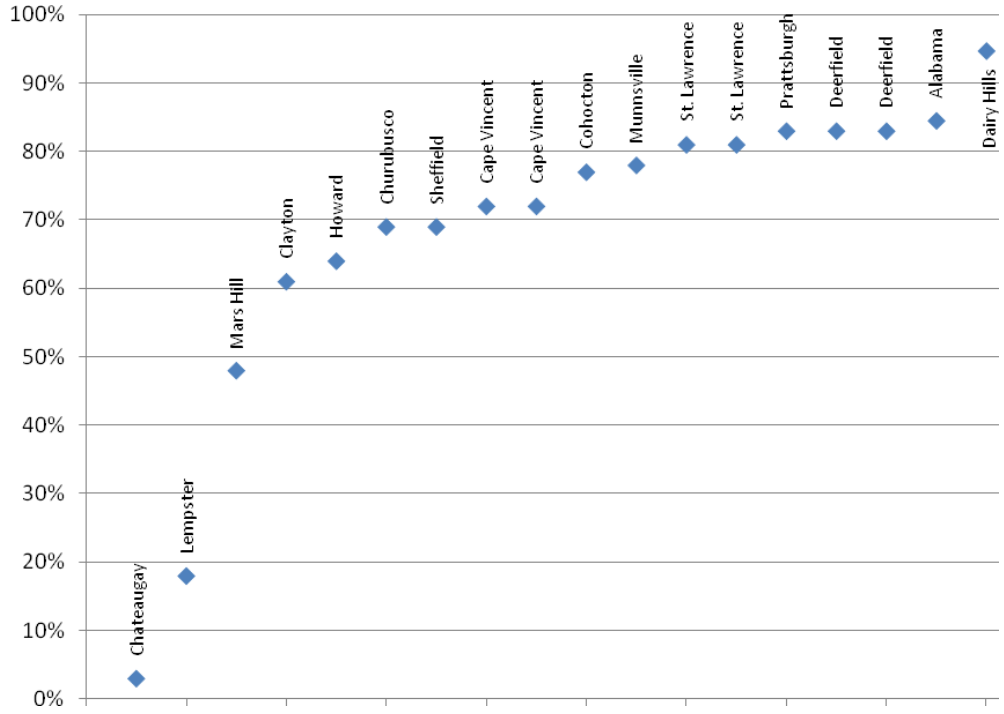

Figure 14. Percent of Observed Raptors Below Turbine Height in Pre-Construction Spring Studies for Northeast U.S. Wind Farms

6.15.24 Comparisons to HMANA Raptor Migration Data (291)

DEIS P 84, second paragraph after bullet items: See my previous concerns about making comparisons from these studies (-9dIseason) vs HMANA studies with nearly continuous sampling over the full fall migration period - see Appendices C6 & C7 review comments at the end of this letter. (Submittal 291- ABR)

DEIS Appendix C6, Spring Migration Surveys, Appendix B. Please point out the massive differences in sampling effort between this study and most hawkwatch sites. (Submittal 291-ABR)

DEIS Appendix C7, Fall Migration Surveys, Section 3.4, third paragraph, page 36: Please point out relevant differences between the methods in these studies so the reader can make a more valid comparison. (Submittal 291- ABR)

Response: Data compiled at HMANA hawk watch sites are the results of field observations substantially more intensive than those completed during pre-construction studies at wind farms. Typical observational data during migration periods at most HMANA hawk watch sites are collected almost every day during a migration season, with observation periods ranging from one to ten or more hours. Raptor migration studies at wind sites in the region are designed to

sub-sample seasonal raptor migration activity. Surveys are typically conducted on 5 to 20 days over the course of a single season, and a survey day typically consists of 7 or 8 hours of observation during periods of peak thermal development. Additionally, it should be noted that HMANA observers typically do not count birds suspected to be local or seen previously that day while observers at some wind study sites will count multiple passes of the same individual birds throughout a survey day. Differences in survey effort and methods should be considered when comparing results between the different datasets.

6.15.25 Comparing Raptor Passage Rates at Different Sites (291)

DEIS P 91, first paragraph: see previous concern about making this comparison (Submittal 291-ABR)

Response: Survey effort may vary among raptor migration study sites. The number of survey days, the number of survey hours per day, the seasonal timing of surveys, and the weather conditions during survey days influence survey results. However, comparing passage rates (number of birds per survey hour) accounts for differences in survey effort among sites. As discussed in FEIS Section 6.15.24, HMANA observers typically do not count birds suspected to be local or seen previously that day while observers at some wind study sites will count multiple passes of the same individual birds throughout a survey day. Additionally, methods may vary among studies at wind sites as some observers may only count birds suspected to be migrant. Finally, visibility conditions may vary at observation locations and visibility influences the number of raptors observed and where raptors may be observed in study areas. These factors should be considered when comparing results between datasets.

6.15.26 Editorial: Likelihood of Bird Impacts (291)

DEIS P 89, Impacts, Construction Impacts to Birds: "would be likely to occur"? (Submittal 291-ABR)

Response: Comment noted.

6.15.27 Clarification: Definition of Significant Impact (291)

DEIS P 90, first paragraph under Operational Impacts to Birds: it is very important to define terms like "significant" (Submittal 291- ABR)

Response: To clarify, operational impacts to birds due to habitat loss are unlikely to result in the death of many individual birds, will not result in county-wide extirpation of any bird species, and are unlikely to result in adverse effects to bird species richness in the area.

6.15.28 Clarification: Definition of Avian Species (291)

DEIS P 90, second paragraph under Operational lmpacts to Birds: please be more specific than "avian species". (Submittal 291- ABR)

Response: As used here, the term “avian species” generally includes all birds that migrate through or breed in the project area.

6.15.29 Clarification: Raptor Avoidance of Collisions (291)

DEIS P 90, second paragraph under Operational Impacts to Birds: ABR believes that it is misleading to say "raptors have demonstrated high turbine collision avoidance behaviors" as this makes it seem like people have actually seen and recorded these behaviors - which is not the case. (Submittal 291- ABR)

Response: More accurate language to replace the subject phrase is: "…collisions between raptors and turbine blades are uncommon at nearly all wind farms."

6.15.30 Clarification: Woodland Birds (291)

DEIS P 91, first paragraph under Operational Impacts on Protected Birds: Vesper sparrow and grasshopper sparrow are "woodland birds"??? - this is not the case. (Submittal 291- ABR)

Response: The Lead Agency concurs with the comment. The sentence should read: "Vesper Sparrow and Grasshopper Sparrow, both state species of special concern and grassland species, exhibit…"

6.15.31 Clarification: Sheldon Avian Study Schedule (291)

DEIS P 91, first paragraph under Results from Operating Wind Farms: do you mean "now" in progress? (Submittal 291- ABR)

Response Improved text reads: "…as studies are scheduled to begin in Spring 2010, the first spring season following conclusion of the remediation and construction activities at the site, or from the…"

6.15.32 Clarification: Reporting of Fatality Statistics (291)

DEIS Appendix C.2, Initial Review, Section 5.2, third paragraph, pg 11: It is more meaningful to present corrected values of fatality rather than number of individual carcasses found. (Submittal 291- ABR)

Response: The comment is correct. Quoting directly from the cited study (Jain et al. 2007):

> "By dividing the estimated number of incidents by the number of turbines and by 1.65 MW per turbine searched in each year, a rate of incidents/turbine and incidents/Megawatt was calculated, allowing comparisons between wind farms of different sizes (different numbers of towers and different turbine sizes). Because we used three different search periods to calculate incidents/MW, we calculated three different estimates for birds and bats. The estimates for birds are: 5.75 incidents/Mw (9.48 incidents/turbine), 2.53 incidents/Mw (4.17 incidents/turbine) and 1.87 incidents/Mw (3.10 incidents/turbine) for 1 day, 3 day and 7 day sites respectively. For bats, the estimates are 12.31 incidents/Mw (20.31 incidents/turbine), 10.82 incidents/Mw (17.85 incidents/turbine) and 6.90/Mw (11.39 incidents/turbine) for one, three and seven day sites respectively."

6.15.33 Breeding Bird Survey Map (291)

DEIS Appendix C.3, Breeding Bird Survey, Section 2.1, first paragraph, page 2: It would have been nice to have the proposed turbine string layer on Fig 1 to confirm that appropriate sampling locations were chosen. (Submittal 291- ABR)

Response: FEIS Appendix A.4.h is a map that shows the DEIS turbine layout and location of breeding bird survey points. Note that the breeding bird study was conducted in 2007, and as is common in preconstruction studies at wind farm sites, locations of turbines and other above- and below-ground appurtenances had not yet been selected, and thus could not be shown on the map at the time of the survey report was prepared.

6.15.34 Breeding Bird Survey Results (291)

DEIS Appendix C.3, Breeding Bird Survey, Section 4.0, fourth paragraph, page 10: Would you have expected to have found additional species if you had established more points? (Submittal 291- ABR)

Response: Points were selected to maximize the number of species found in various habitats, and addition or more survey points would not necessarily have resulted in more species being found.

Page 10 of Appendix C3 indicates "The point count survey produces an index of relative abundance, rather than a complete count of breeding bird populations." Likewise, it can be expected that additional surveys always have potential to detect species not previously documented. See for example the discussion on page 9 comparing results of the NY BBA and USGS BBS results to the results of point counts in the Project Area. A species accumulation curve was not developed as part of the survey. The "Area Searches" were completed to in part supplement the list of detected species, and these surveys increased the number of detected species from 58 to 65.

6.15.35 Clarification: Note Unclear (291)

DEIS Appendix C.3, Breeding Bird Survey, Appendix A, Table 2. Please define "within what distance" (Submittal 291- ABR)

Response: The distance to detected birds is provided in Appendix A, Table 1, one page prior to Appendix A, Table 2.

6.15.36 Town Determinations on Bird and Bat Mitigation (382)

Mitigation for Impacts to Birds and Bats (Section 3.5) - The mitigation measures mentioned to reduce impacts to birds and bats are all good options for the project sponsor to consider implementing. Rather than the lead agency, the NYSDEC and USFWS are the appropriate parties to consult when making judgements on whether impacts are of "significant concern" to birds or bats within the project area, and to make mitigation recommendations. (Submittal 382-NYS DEC)

Response: The Lead Agency understands the important role of the Department of Conservation, and of the US Fish and Wildlife Service regarding potential effects to birds and

bats. As Lead Agency, however, the Town of Orangeville is obligated to make determinations regarding the significance of potential impacts and appropriate mitigations, if any.

6.15.37 Editorial (291, 382)

DEIS P 88, Federal Listed, Endangered, Threatened or Protected Birds: "checked with" is repeated. (Submittal 291- ABR)

Also, the post-construction bird and bat monitoring plan is listed as being in Appendix C. It is in fact located in Appendix I-4. (Submittal 382-NYS DEC)

Response: Comments noted.

6.15.38 Clarification: Reference Requested (291)

DEIS Appendix C5, Winter Surveys, Section 1.1, second paragraph: Please provide a reference. (Submittal 291- ABR)

Response: This comment pertains to the sentence: "The daytime and crepuscular surveys were modeled after the Hawk Migration Association of North America (HMANA) wintering raptor protocol…" The protocol in question is Hawk Migration Association of North America, 2007 Winter Raptor Survey Directions. Available at http://hmana.org/WRS/WRS_directions.pdf.

6.15.39 Winter Survey Driving Speed, Surveys at Dusk (291)

DEIS P 88, State Listed Endangered, Threatened or Protected Birds: see ABR's general concerns regarding sampling intensity during winter in Appendix C-5. (Submittal 291- ABR)

DEIS Appendix C5, Winter Surveys, Section 3.1, Table 1, Page 7: If the surveyor actually surveyed 13 miles in 15 min they were traveling at 52 mph. This is not the "10-25mph" stated in methods and is especially troubling given the "thick fog" noted on this day. The data from this survey period are not useful -which is unfortunate given that there were only 3 times when dusk was surveyed. Please clarify these statements accordingly. (Submittal 291- ABR)

Response: For clarification, all surveys were conducted at an average driving speed of 10 to 25 mph. In the Project Area, the observer would drive more rapidly past areas lacking suitable habitat (e.g., residential areas), and would slow down and more thoroughly scan areas with suitable habitat for target species. The odometer was set as the observer entered the Project Area. Therefore, for the dusk survey on March 19, 13 miles of suitable habitat were not surveyed; rather 13 total miles were driven in the Project Area that evening. The observer slowed down to 10 mph or less while passing patches of suitable habitat within the 13 miles traveled that evening. FEIS Appendix A.4.e is an updated version of the subject table that more appropriately labels this column "miles driven."

The dusk survey on March 19 was abbreviated to 15 minutes due to the thick fog and restricted visibility; however, this data is not considered useless as it is important to consider raptor activity during a variety of weather conditions. The comment implies that crepuscular periods were not adequately surveyed; however, crepuscular surveys (dusk and dawn) accounted for 32% of the total hours surveyed during the 2008 winter raptor study.

6.15.40 Reporting of Winter Survey Results (291)

DEIS Appendix C5, Winter Surveys, Section 3.1, Table 1, page 7: methods state there are 3 survey periods, but this table has them mixed together, making it impossible to determine survey effort for the 3 periods. Also, it appears that the amount of time/survey period/d is quite variable - not ideal from a sampling perspective. (Submittal 291- ABR)

Response: The comment correctly identifies that the amount of time per survey period is variable. The intent of the surveys however was not to compare survey results among the three periods. The survey, as completed, complies with the Wildlife Study Plan provided to and commented upon by the NYDEC.

An updated version of the winter survey table is provided in FEIS Appendix A.4.e. The table is now organized by the three survey periods (crepuscular, morning, and mid-day) with the total number of survey hours per survey period provided. The number of survey hours among the different survey periods is similar with 7.5 hours for crepuscular periods, 7.5 hours for morning surveys, and 8.5 hours for mid-day surveys. It is recognized that there was variability among the number of hours surveyed per day per survey period, and that from a sampling perspective it would have been more statistically sound to have repetition in the number of survey hours. It should be noted that there was repetition in the total number of miles surveyed per survey day (ranging from 60 to 69 miles per day). However, the study objectives were not to make comparisons among survey periods or survey periods per day; rather the goal of the surveys was to determine the presence or absence of raptor species. Reporting results as the number of raptors observed per miles surveyed per day, per survey period, or for the duration of the study, can account for differences in the number of hours or miles surveyed among individual surveys.

6.15.41 Clarification: Birds or Raptors (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.3, graph caption, page 28: All birds or raptors? Please be specific. (Submittal 291- ABR)

Response: The subject report documents results of a spring raptor survey. As such, even though the caption in Figure 3-3 in this document uses the general title “# birds observed”, it would more be more accurate if it were written to read “# raptors observed.”

6.15.42 Clarification: 3^2 Species (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.3, third paragraph, page 29: Is this a typo or do you simply mean 9 species? (Submittal 291- ABR)

Response: A sentence in the DEIS reads “A total of 39 raptors representing 3^2 species were observed…” The superscript “2” refers to a footnote at the bottom of page 29.

6.15.43 Raptor Survey Days and Variations in Results (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.4, third paragraph, page 34: What is meant by "significant"? When you only sample for 9 d during a migration season I would say that you could easily expect to have large annual variation - based on the low sampling intensity alone. (Submittal 291- ABR)

Response: The primary point of this section in the spring report is that there would be some degree of annual variation in passage rates at any particular hawk watch site due to variable regional populations from year to year, as well as differences in daily weather conditions at a site among years. The paragraph was intended to indicate that there were no unusual circumstances surrounding the survey period in terms of storms or unusually cold or warm weather; therefore, the results from the 2008 spring surveys may be representative of other years with similar weather and other stochastic conditions.

6.15.44 Raptor Flight Heights as a Function of Wind Conditions (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.4, fifth paragraph, page 35: It would have been useful to describe if flight altitudes varied by wind conditions during this study. (Submittal 291- ABR)

Response: Comment noted.

6.15.45 Raptor Conclusions (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.5, first paragraph, page 36: How can you say this without providing some supportive evidence? (Submittal 291- ABR)

Response: This comment pertains to the sentence "The spring 2008 raptor survey is representative of a typical spring migration season in the Project area." The primary point of this section in the spring report is that there would be some degree of annual variation in passage rates at any particular hawk watch site due to variable regional populations from year to year, as well as differences in daily weather conditions at a site among years. The paragraph was intended to indicate that there were no unusual circumstances surrounding the survey period in terms of storms or unusually cold or warm weather; therefore, the results from the 2008 spring surveys may be representative of other years with similar weather and other stochastic conditions.

6.15.46 Limitations of Raptor Observations by One Person (291)

DEIS Appendix C6, Spring Migration Surveys, Section 3.5, third paragraph, page 36: Please elaborate on this point. (Submittal 291- ABR)

Response: This sentence refers to how an observer's location, and their field of view from that location, influences where birds may be observed in the study area. For example, birds flying closer to the observer would more likely be seen by the observer than birds at greater distances from the observer. There was only one observer conducting the surveys from one location; therefore there are no other data available for another point of reference. This should be considered when interpreting the reported raptor locations and flight paths: the observed flight path locations do not necessarily indicate that raptors were not occurring over other locations outside of the observer's view.

6.15.47 Survey Dates for Fall Raptor Surveys (291)

DEIS Appendix C7, Fall Migration Surveys, Executive Summary, second paragraph, page E2: wildlife study plan states 1 Sept to 1 Nov (Submittal 291- ABR)

DEIS Appendix C7, Fall Migration Surveys, Section 3.3, first paragraph, Page 30: Doesn't match study plan, which was 1 Sept to 1 Nov. Also the timing of the surveys does not match the study plan (supposed to have 3 survey weeks of 3d/week with a 2 week break between each of the survey weeks). (Submittal 291- ABR)

Response: The protocol for the 2008 spring and fall raptor surveys was based on a Wildlife Work Plan developed by Woodlot Alternatives and Invenergy that was submitted to the NYSDEC for review on November 30, 2007. The work plan incorporates NYSDEC's comments (letter dated January 9, 2008) regarding the proposed protocol. The plan did not intend to require surveys on all days between April 1 and June 1 and between September 1 and November 1. Rather, the goal of the plan was to sub-sample 9 days per season within these survey windows. Days with conditions favorable to raptor movements were targeted within these survey windows. Therefore, the survey dates are consistent with the study plan and NYSDEC's comments. DEC had requested the fall surveys extend beyond October 15 to capture activity of late migrating raptors; accordingly, the last fall survey date was October 21.

Surveys in the spring and fall were typically conducted in three 3-day blocks spaced out over the survey windows. However, inclement weather occurred during what would have been the third day of the second and third survey blocks (the September 28 and September 29 block and the October 10 and October 11 block). Therefore those survey periods were conducted in two-day blocks. In order to compensate for this inconsistency with the work plan, the fourth survey block included the full three-day period and as a result, there was an additional day of survey for a total of 10 days instead of the nine planned survey days.

6.15.48 Clarification: Number of Fall Raptors Oberserved (291)

DEIS Appendix C7, Fall Migration Surveys, Section 3.3, sixth paragraph, page 34: Why is there n=33 flight positions when 35 birds were observed? Especially when you say that raptors "often occurred in multiple flight positions"? (Submittal 291- ABR)

Response: There were two turkey vultures for which the flight position data was not recorded by the observer.

6.15.49 Raptor Observations and Wind Direction (291)

DEIS Appendix C7, Fall Migration Surveys, Section 3.4, seventh paragraph, page 37: Please show in Results how it varied by wind direction (Submittal 291- ABR)

Response: Table 42 lists wind direction and raptor flight azimuths during the fall 2008 raptor surveys. There are no evident relationships between the specific wind directions and flight azimuths observed; however, wind direction is believed to have influenced the observed flight paths and behaviors as wind direction and wind speed are known to effect migrant raptor flight paths and flight heights (Richardson 1998).[83]

[83] Richardson, W.J. 1998. Bird migration and wind turbines: migration timing, flight behavior, and collision risk. Proceedings: National Avian-Wind Power Planning Meeting III, sponsored by Avian Workgroup of the National Wind Coordinating Committee, June 2000.

Table 42. Wind Direction and Flight Azimuths During Fall 2008 Avian Migration Survey

Date	Predominant Wind Direction During Survey Day	Raptor Observation No.	Flight Azimuth
9/13/2008	W	1	N
9/14/2008	W	1	SE
9/14/2008	W	2	W
9/14/2008	W	3	E
9/15/2008	NW	1	E
9/15/2008	NW	2	S
9/15/2008	NW	3	W
9/29/2008	NW	1	NW
10/10/2008	W	1	NW
10/10/2008	W	2	NW
10/10/2008	W	3	NW
10/10/2008	W	4	NW
10/10/2008	W	5	W
10/10/2008	W	6	NE
10/10/2008	W	7	W
10/10/2008	W	8	W
10/10/2008	W	9	W
10/10/2008	W	10	Nw
10/10/2008	W	11	n/a - (Raptor was heard but not observed)
10/11/2008	variable	1	S
10/11/2008	variable	2	W
10/11/2008	variable	3	SW then E
10/11/2008	variable	4	SW then E
10/11/2008	variable	5	E then W
10/11/2008	variable	6	W
10/19/2008	S	1	E
10/19/2008	S	2	W
10/20/2008	WSW	1	S

6.15.50 Weather During Fall Raptor Surveys (291)

DEIS Appendix C7, Fall Migration Surveys, Section 3.5, first paragraph, page 38: Please provide some supportive evidence to defend this statement. For example, were the weather conditions in this study typical? (Submittal 291- ABR)

Response: The subject paragraph is intended to indicate that there were no unusual circumstances surrounding the survey period in terms of storms or unusually cold or warm weather; therefore, the results from the 2008 spring surveys may be representative of other years with similar weather and other stochastic conditions.ok

6.15.51 Start Time for Raptor Surveys (291)

DEIS Appendix C6, Spring Migration Surveys, Page E2, second paragraph: Study plan says between "8 am until 4 pm", so these started 1 h late (Submittal 291- ABR)

DEIS Appendix C6, Spring Migration Surveys, Section 3.2.1, second paragraph, Page 26: The wildlife study plan stated that it would be 8am to 4 pm (Submittal 291- ABR)

DEIS Appendix C7, Fall Migration Surveys, Section 3.2.1, second paragraph, page 28: good [survey start and finish times], this matches the study plan (Submittal 291- ABR)

Response: The wildlife study plan, dated November 30, 2007, indicated that, in general, raptor surveys are commonly conducted from 9 am to 4 pm during peak periods of raptor activity but that the Stony Creek surveys would be conducted from 8 am to 4 pm in an effort to capture more migrant and local raptor activity. There was a misinterpretation of the study plan during the spring surveys which resulted in the hour-late start time of 9 am. However, it is believed that the majority of raptor activity that occurred on spring survey days was captured as most of the observations (49%) occurred between 10 am and 12 pm over the course of the survey period. Only 5% of observations occurred before 10 am. The survey start time was adjusted to 8 am for the fall surveys.

6.16 Bats

6.16.1 Number of Detector Sites (291)

DEIS P 94, first bullet item: Lack of spatial replication. The Wildlife Study Plan states detector locations at 2 met towers. (Submittal 291-ABR)

Response: The Wildlife Study Plan was prepared after completion of the 2007 studies. The 2007 acoustic surveys were completed August 23 – October 14, prior to the October 30, 2007 meeting between Stony Creek and the NYSDEC to discuss the scope of chiropteran studies, prior to submission of the study plan by Stony Creek to the NYSDEC (November 21, 2007), and prior to the NYSDEC comment on the study plan (January 9, 2008).

Although bat detectors were deployed at one met tower location during the 2007 surveys, for the 2008 surveys detectors were deployed at two met tower locations, as specified in the Wildlife Study Plan. In 2008, at each met tower location two detectors were deployed in the met tower: one detector was placed near the rotor-swept zone at 45 meters (148 ft) and a second was placed at 25 m (82 ft) above the ground. Also, at each met location, a bat detector was deployed in a tree (at 2 m) at the forest edge bordering the met tower fields.

6.16.2 Consistency of Studies with Study Plan (291)

DEIS Appendix C6, Spring Migration Surveys, Page E1, third paragraph: Although ABR believes this study design is better, it is not compliant with the one outlined in the Wildlife Study Plan of 21 November 2007, which calls for 2 detectors near the top of the met tower (one facing vertical and one facing horizontal) and 1 detector at a lower height. (Submittal 291- ABR)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Executive Summary, third paragraph, page E1: This study design does not comply with the Wildlife Study Plan discussed in an earlier paragraph. (Submittal 291-ABR)

DEIS P 98, second paragraph: Based on limited sampling intensity and poor study design. (Submittal 291-ABR)

Response: After the Wildlife Study Plan was finalized, Woodlot/Stantec contacted NYSDEC on March 26, 2008 (via email) to express concerns associated with vertical deployment of detectors. Stantec was concerned about equipment malfunctions due to water exposure of detectors in this position as well as concerns with remaining consistent with study methodologies among other Project sites for comparison of results. NYSDEC concurred with these concerns and indicated that it was acceptable to use two horizontal facing detectors in each met tower with no vertically oriented detectors (email dated March 31, 2008). Therefore it was decided that the detectors would sample at a high and low position at the met tower, with the third detector sampling at a height near ground level at the forest edge. The tree detector location served as a comparison to met tower locations because increased bat activity at forest borders is well documented.[84]

[84] England, A., B. French, K. Gaukler, C. Geiselman, B. Keeley, J. Kennedy, M. Kiser, S. Kiser, R. Kowalski, D. Taylor, S. Walker. 2001. Bats in Eastern Woodlands. Prepared by Bat Conservation International.

Detectors were deployed at the two available met tower locations at the time of surveys. Placement of two met tower detectors (high and low) and one tree detector near the met tower is standard for these types of surveys at wind sites. Additionally, the 2008 detector study went above and beyond the scope of other studies in the region by including six total detectors (at two different met tower locations) as opposed to just three detectors (at one met tower location), and by extending surveys into November when many surveys end in mid-October.

6.16.3 Distance to Tree Detectors (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.1.1, second paragraph, page 5: What does 'near' mean? How far (m)? (Submittal 291- ABR)

Response: In this section of the spring 2008 report, 'near' can be defined as within 80 m of the tower: the tree detectors were deployed at the forest edge which, at each met site, was within approximately 80 m of the met tower.

6.16.4 Detector Orientation (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.1.1, second paragraph, page 5: Distance from tower to forest edge. Are detectors on tower facing toward or away from forest edge? (Submittal 291- ABR)

DEIS Appendix C6, Spring Migration Surveys, second photograph, page 7: Looks as if detectors are not oriented in the same direction. This could confound results. (Submittal 291- ABR)

Response: The tree detectors were deployed at the forest edge which, at each met site, was within approximately 80 m of the met tower. The tower detectors were oriented to face northeast due to how the solar panel powering the detectors needed to be deployed; therefore, the detectors were not purposefully facing toward the forest edge but generally were facing the forest edge. A reflector shield of smooth plastic was placed at a 45-degree angle directly below the microphone of each detector. The angled reflector allowed the microphone to record the airspace horizontally surrounding the detector.

All tower detectors were oriented to face northeast due to how the solar panel powering the detectors needed to be deployed. Logistics of detector deployment in the met towers may have resulted in slight variations in the directions the detector microphones were facing. A reflector shield of smooth plastic was placed at a 45-degree angle directly below the microphone of each detector. The angled reflector allowed the microphone to record the airspace horizontally surrounding the detector.

6.16.5 Deployment Dates Not the Same (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.1.3, seventh paragraph, page 12: confounds the ability to make a good comparison, as noted. (Submittal 291- ABR)

[Note: the subject paragraph points out the detectors on the south met tower were deployed 15 days later than those on the north tower.]

Response: Comment noted.

6.16.6 Different Habitat Types for Lower Detectors (291)

DEIS P 95, first paragraph: Placing the lower detector in a different habitat type confounds the data. Therefore, it is not possible to make height comparisons. Were there differences in activity between the 2 heights at the met towers? (Submittal 291-ABR)

Response: There were differences in activity between the high and low detectors deployed in both met towers during the spring 2008 surveys: both the north and south met high detectors had a detection rate of 0.1 calls per detector night, while the north and south met low detectors had a rate of 0.6 and 0.8 calls per detector night, respectively.

Please note that the methods used during the 2008 bat detector surveys are standard methods used for pre-construction bat surveys at wind sites in the region. Deploying detectors at different heights and within different microhabitats allows for passive sampling of bat activity and species composition at heights below and approaching the rotor-swept zone of the proposed turbines

Stony Creek concurs with the premise that differences between data recorded at the tree detectors and data recorded at the met towers may be affected by the differences in habitat as well as the elevation of the recording device. The text in this paragraph of the DEIS does not attempt to attribute this difference to any particular variable. Additional presentations of these data sets are available in DEIS Appendix C.6 and C.7.

6.16.7 Bat Spring Survey Dates (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.1, second paragraph, page 4: How was Spring defined? Provide rationale for sampling these dates. (Submittal 291- ABR)

Response: The period for "Spring" raptor surveys was identified as Apr 15 to May 31 in the Wildlife Study Plan that was prepared by Stony Creek, submitted to DEC, approved by DEC, and provided as DEIS Appendix C.1 (the "Study Plan"). The Study Plan specified that bat surveys would be conducted from April 15 through October 15, which is the time period specified in the September 2009 NYSDEC Guidelines for Conducting Pre-Construction Bird and Bat Studies at Commercial Wind Projects. In the Stony Creek Study Plan, the bat surveys were broken into periods as labeled as "spring, summer, and fall," primarily to simplify reporting of results.

6.16.8 Shortened Survey Period for Fall 2007 (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.2.1, first paragraph, page 5: How do you define the Fall Migration Period? 20 August is well after bats are migrating at that latitude. At Maple Ridge, NY, Jain et al. (2006) documented the highest fatalities in July and August. (Submittal 291-ABR)

DEIS P 94, third bullet item: Fall migration in this part of the country begins well before mid-August. Furthermore, the dates do not correspond with the Wildlife Study Plan. The fall period also goes well beyond the 15 October date. Including activity data into November, when the vast majority of bats are either out of the area or hibernating, likely deflated the fall call rate. (Submittal 291-ABR)

DEIS P 94, first bullet item: very late start date. (Submittal 291-ABR)

Response: In the region were the Project is proposed the bat swarming and migration period takes place from mid-July to early November.

It is recognized that the 2007 fall detector surveys missed both the beginning and end of the fall bat migration period. This field survey was conducted prior to the development of the Wildlife Study Plan in November 2007. A complete summer and fall season of bat detector surveys were conducted in 2008 with surveys extending from June 1 to November 4, 2008 (in addition to the 2008 spring surveys).

6.16.9 Labeling of Bat Study Seasons (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Executive Summary, fourth paragraph, page E1: wildlife study plan states fall=15 Jul to 15 Oct, should define seasons as per Wildlife Study Plan (Submittal 291-ABR)

Response: The Wildlife Study Plan provided the timeframe for when the surveys should be conducted; it did not indicate the breakdown of the timeframes for which the data should be summarized. Please note that although a detector rate is provided for the report's designation of the summer (June 1 to August 14) and fall (August 15 to November 4) periods, data were also summarized on a monthly basis and is available in DEIS Appendix C.7, Table 2-1.

6.16.10 Grouping of Bat Calls (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.1.2, fourth paragraph, page 9: Based on this classification of calls, there is no difference between LFUN and BBSHHB. Why not group them together? (Submittal 291- ABR)

Response: LFUN calls don't have call signatures which would allow assigning them to the BBSHHB guild, although it is likely the calls came from a big brown bat, silver-haired bat, or hoary bat.

6.16.11 Bat Activity vs. Detector Height (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.1.3, fourth paragraph, page 11: This makes it seem as if bat activity is a function of detector height, when it is more likely to be a function of location (along the forest edge). (Submittal 291- ABR)

Response: It is agreed that the location of detectors in different microhabitats (i.e. open field verses forest edge) likely influences documented bat activity rates. However, detector height is also believed to influence detector rates as different species of bats are known to forage at specific heights above ground level. For example, little brown bats will forage at heights between ground and sub-canopy level to canopy level (England et al. 2001).

6.16.12 Presentation of Results Relative to Sunset (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.1.3, ninth paragraph, page 13: It's more relevant to discuss activity in relation to sunset rather than an arbitrary time (7:00 pm). (Submittal 291- ABR)

Response: It is agreed that the data should be processed by activity relative to "civil sunrise" and "civil sunset" because the time the sun sets and rises changes over the course of a

survey season. If the data were to be reanalyzed in this way, it would most likely make any activity peaks in the hourly periods more tight and pronounced as has seen at other sites when the data has been reanalyzed in this manner (Stantec, unpublished data). However, the way the data were analyzed by hour in the spring 2008 report generally demonstrates the timing of peaks in nightly activity. Bat acoustic data collection and analysis has been evolving over recent years and analyzing data in relation to civil sunrise and sunset is the current method of analysis.

6.16.13 Myotis Calls at Met Towers (291)

DEIS P 95, first paragraph: What about difference between met tower locations? (Submittal 291-ABR) [the comment refers to a paragraph in the DEIS that reports differences in myotis calls detected between the two tree detectors, but between the two met tower detectors]

Response: Table 43 summarizes the Myotis calls at various locations in fall 2008, as reported in DEIS Appendix C.7. As shown in Table 43, the majority of the calls came from the tree detectors, and there was no significant difference in how many calls were detected between the two met tower locations.

Table 43. Myotis Calls Detected in Fall 2008

Detector Site and Position	No. *Myotis* Detected
North Met Tower, 1900 ft above sea level	
"High" (in the Met Tower guy wires, ~150 ft above ground level)	15
"Low" (in the Met Tower guy wires, ~80 ft above ground level)	19
"Tree" (in a tree at the edge of the field with the met tower, ~7 ft above ground level)	671
South Met Tower, 1910 ft above sea level	
"High" (in the Met Tower guy wires, ~150 ft above ground level)	3
"Low" (in the Met Tower guy wires, ~80 ft above ground level)	10
"Tree" (in a tree at the edge of the field with the met tower, ~7 ft above ground level)	4,100

6.16.14 Myotis Calls at Tree Detectors (291)

DEIS P 95, first paragraph: Is this because the detectors were at a lower altitude or because they were along forest edge? (Submittal 291-ABR)

DEIS P 95, first paragraph: This is an acceptable comparison, but why was there a difference? What differences between these 2 forest locations accounted for the discrepancy in bat activity? (Submittal 291-ABR)

[the comments refers to a paragraph in the DEIS that reports differences in myotis calls detected between the two tree detectors]

Response: As shown in Table 43, there was no significant difference in the elevation for the north and south met tower and detector sites. Thus, the difference in call rates is not likely due to elevation differences between the sites.

DEIS Appendix C.6 and C.7 discuss possible explanations for the differences in calls recorded at different locations. The DEIS Appendix C.7 conclusion states that it is typical, for acoustic bat

studies conducted in the Project region, to collect more calls from detectors in trees than from detectors in met towers.

Sufficient detail is not available to analyze reasons for differences in measurements between the two tree detectors. As noted in DEIS Appendix C.7 acoustic bat results should be interpreted with caution for a variety of reasons, including the fact that detectors can record multiple calls from a single bat, giving the impression there are more bats present than may have actually been in the vicinity of the detector. Nonetheless, a more detailed analysis of the difference in bat calls between the two tree detectors is unlikely to provide information that affects the overall assessment of the environmental impacts of the Project.

6.16.15 Larger Bats (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.2, seventh paragraph, page 21: This is not new data. Several studies prior to 2006 have documented altitudinal differences in bat activity with lower-frequency, larger bats typically flying at higher altitudes and higher-frequency, smaller bats flying at lower altitudes. (Submittal 291- ABR)

DEIS Appendix C6, Spring Migration Surveys, Section 2.2, seventh paragraph, page 21: This would be a good opportunity to discuss the echomorpholoy of bats. Typically, larger, less maneuverable, lower-frequency calling bats typically fly in more open space and at higher altitudes and smaller, more maneuverable, higher-frequency calling bats fly in more cluttered habitat and at lower altitudes. (Submittal 291- ABR)

Response: We concur with the comment. DEIS Appendix C.6 makes this point, and stated that this was a trend indentified by previous work.

6.16.16 Correlation of Nightime Temperature to Bat Activity (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.2, ninth paragraph, page 21: Terms like "coincide" are not statistical terms and are not appropriate for a scientific report. No tests were run to examine correlations, but if they would have been done they would have found a very weak correlation. (Submittal 291- ABR)

Response: Comment noted.

6.16.17 Further Analysis of Bat Activity Levels at Forest Edges (291)

DEIS Appendix C6, Spring Migration Surveys, Section 2.2, eleventh paragraph, page 22: There is limited discussion of activity related to habitat. There are numerous articles discussing higher activity levels in and around forest edge. Your data seems to show the same patterns. Edge provides bats with shelter from weather, increased insect activity and navigational references. Any thoughts on why the southern tree stand received more calls compared to the northern? Difference in stand height, proximity to water, etc.? (Submittal 291- ABR)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Section 2.5, third paragraph, page 25: List specifics habitat differences to help with possible siting of turbines. (Submittal 291-ABR)

Response: Habitat conditions may have influenced the results at the south met tree detector and the north met tree detector. Better quality habitat may result in increased bat

activity among locations. Confounding factors may include land owner practices such as woodlot management (influencing roosting opportunities) as well as a variety of agricultural practices. Accounting for the multitude of stochastic factors influencing quality of habitat at detector locations is beyond the scope of the surveys conducted for the Project. While the results may indicate a difference in quality of habitat between sites, please consider that detection rates are not necessarily correlated with the actual numbers of bats in an area, because it is not possible to differentiate between individual bats. Multiple calls may represent the same individual(s) making multiple passes by a detector while foraging.

6.16.18 Likelihood of Low Bat Activity at Hub Height (291)

DEIS P 98, second paragraph: It is inappropriate to make this statement. The met towers were located in a grassy area, whereas the ground detectors were near forest edge. Is difference attributable to location or height. What if higher detectors were placed near forest edge? It is likely they also would have recorded more activity. It is well documented that bats also use the horizontal edge created by the forest canopy. (Submittal 291-ABR)

[The subject statement discusses likelihood of low bat mortality because most of the bat activity recorded at the site detectors was at lower elevation detectors.]

Response: It is agreed that the location of detectors in different microhabitats (i.e. open field verses forest edge) likely influenced documented bat activity rates. Bats are known to forage in open areas as well as at forest border.[85] However, detector height is also believed to influence detector rates as different species of bats are known to forage at specific heights above ground level. For example, little brown bats will forage at heights between ground and sub-canopy level to canopy level.[86] Migrating bats are believed to fly at heights above tree canopy (both in forested and open areas) based on increased bat collisions with turbines during migration periods. Without data from multiple study sites specifically comparing met tower detector data in an open field to detector data collected at similar heights over nearby tree canopy, describing differences in bat activity in these locations would be based on speculation. However, it is agreed that there likely would be some bat activity above tree canopy of both migrant and local bats.

Please note that the objective of deployment of detectors in met towers at wind study sites is not to sample activity in a field habitat; rather the placement of detectors in tall structures such as met towers is to sample heights approaching the proposed rotor-zone and to determine activity of migrant bats at these heights (because migrant bats are believed to be most often involved in turbine collisions based on timing of the majority of bat fatalities).

6.16.19 Barotraumas and Cumulative Effects to Bats (074, 375, 278)

All bats seem to be at risk of barotraumas, the condition where air pressure changes on the down gradient side of turbine blades causes bat lungs to explode. However, this condition was not mentioned in the DEIS nor was there an estimate of potential impacts to bat populations. Likewise there was no discussion on white nose syndrome. This serious ailment has killed over a

[85] England et al., 2001

[86] England et al., 2001.

million bats in the northeast and there are no signs of it diminishing. Instead, it is expanding to new areas every year. This situation, combined with high levels of mortality at wind energy projects, may devastate bat populations. We, therefore, recommend the DEIS be revised to include a discussion on both barotraumas and white nose syndrome and how this project may contribute to the cumulative decline of bats. (Submittal 278 – US Dept of the Interior)

I have yet to find any mention of barotrauma - the leading cause of death of bats near industrial wind turbines. (Submittal 074 – Wilkenson, Nyla; 375 – Wilkinson, Nyla (verbal))

Response: The DEIS text regarding bat mortality should have identified barotrauma in discussions concerning bat mortality. Mortality estimates presented in DEIS Table 18 likely resulted from both collisions and barotrauma.

An analysis of cumulative effects to bats, including fatalities caused by interactions with wind turbine blades and white nose syndrome is provided in FEIS Section 0.

6.16.20 Study Ended After Bats were Found (074, 375)

It seems strange to me that the bat study ended 3 days after the highest numbers of bats were counted. (Submittal 074 – Wilkenson, Nyla; 375 – Wilkinson, Nyla (verbal))

Response: Acoustic surveys in 2008 were conducted in 2008 for the full period starting April 15, 2008 through November 4, 2008. Surveys were not discontinued after high bat readings were identified. The confusion may stem from the fact that data collected from April 5 to May 31 and were summarized in the "Spring Report" (DEIS Appendix C.6), and data collected from June 1 to November 4 were summarized in the "Summer/Fall Report (DEIS Appendix C7).

6.16.21 Likelihood of Listed Bats (074, 375)

The bat detectors could not differentiate between the different Myotis bats - therefore, they could be the common Little Brown Bat or Northern Long Eared Bat, or the Eastern Small Footed Bat that is a species of special concern. We could even have the Federally endangered Indiana Bat, who even trained researchers have a hard time distinguishing from the Little Brown Bat - but they would most likely come in the summer, and no studies were done then. There is no mention of ecological consequences due to a significant decline in bats in Orangeville that may result from the installation of Industrial Turbines. This issue is especially important to consider in light of the cumulative impact that other wind farms in our area. Sheldon Wind Farm and the Bliss Windpark - could have on bats and the local ecology. (Submittal 074 – Wilkenson, Nyla; 375 – Wilkinson, Nyla (verbal))

Response: Data collected during the Stony Creek studies, in coordination with NYSDEC, were designed to collect data on the number of bats that could be at typical turbine locations, not to identify all species at the site.

The small-footed bat may be present throughout New York in low numbers. Only about 3,000 small-footed bats are known from hibernacula counts in the state, and nearly all of those individuals occur in three hibernacula in extreme eastern New York State near Lake Champlain and Lake George and thus would no likely be impacted by the Project.

Similarly, the known distribution of Indiana bats, as recently reflected in coordination with the US Fish and Wildlife Service (see submittal 278 addressed in Section 6.19.20), does not include this portion of New York State and thus this species would not be impacted by the Project.

Cumulative effects to bats are addressed in FEIS Section 0.

6.16.22 Recommendations of American Society of Mammalogist (074, 375)

I request that the condition of Barotrauma, the ecological consequences of bat decline in the area, the detrimental effects to all wildlife and the recommendations of the American Society of Mammalogists be included, considered and documented. (Submittal 074 – Wilkenson, Nyla; 375 – Wilkinson, Nyla (verbal))

Response: Barotrauma and cumulative effects on bats are discussed in FEIS Section 6.16.19 and Section 4.11.

In 2008 the American Society of Mammalogists issued *Effects of Wind-Energy Facilities on Bats and Other Wildlife.* It is presumed these are the recommendations referred to in submittals 074 and 375. The specific recommendations from this document are listed, and commented upon below.

> *(a) Commitments to comprehensive environmental assessments that include multi-year pre- and multi-year post-construction studies be made prior to selection and construction of sites for wind energy facilities (U.S. Fish and Wildlife Service, 2003; Government Accountability Office 2005; National Research Council 2007).*

Preconstruction studies completed at Stony Creek are in compliance with NYSDEC's *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects.* In addition, as summarized in FEIS Table 38, Stony Creek completed two seasons of pre-construction fall bat acoustic studies, and Stony Creek is proposing a post-construction monitoring program that includes multi-year studies.

> *(b) Environmental assessments by professional biologists or organizations with no conflict of interest in any aspect of financing construction or operation of wind energy facilities (Kunz et al. 2007a; National Research Council 2007).*

Environmental assessments for Stony Creek were conducted by professionals without conflicts of interest. Reports prepared by these professionals are provided in their entirety as appendices to the DEIS.

> *(c) Independent external review of evaluations and reports before siting of wind energy facilities to insure the techniques and interpretation of results are appropriate, adequate, scientifically rigorous, and in the public domain Kunz et al. 2007a; Arnett et al 2008).*

The Stony Creek studies have been reviewed by regulating agencies and have been made available to the public.

> *(d) Siting and placement of turbines and their associated infrastructure to avoid fragmenting large contiguous tracts of wildlife habitat (Arnett et al. 2007; National Research Council 2007).*

Within the highly fragmented mix of vegetation types in the project area, infrastructure proposed as part of the Stony Creek project has been sited to avoid fragmenting remaining forest to the extent practicable. Siting of project components is being modified to avoid other sensitive environment resources including wetlands, and Jefferson salamander habitat.

> *(e) Siting and placement that avoids bat hibernation, breeding, and maternity colonies, or flight paths between colonies and feeding areas (Arnett et al. 2007; Cryan and Brown, 2007; National Research Council 2007).*

No hibernacula, maternity colonies, or flight paths between colonies and feeding areas are known to exist in the project area. Preconstruction studies completed by Stony Creek complied with NYSDEC's *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects*.

> *(f) Siting and placement to avoid local pathways of bat or bird migration or areas where these species are highly concentrated (Arnett et al 2007; National Research Council 2007).*

No such pathways are known to exist in the project area.

> *(g) Siting and placement that avoids documented locations of any species of wildlife protected under State or Federal authority, that could be affected adversely (U.S. Fish and Wildlife Service 2003; Arnett et al. 2007).*

DEIS Section 3.5.5 indicates no effects to state- or federally-listed species are anticipated.

> *(h) Increased research on effects of onshore and offshore wind-energy facilities to assess the nature and extent of risks to wildlife (Arnett et al. 2007, 2008; Kunz et al. 2007a, 2007b).*

We encourage the American Society of Mammalogists to research the important topic of wildlife interactions with commercial-scale wind energy developments. Research of this nature is outside the scope of the Stony Creek EIS.

> *(i) Systematic investigation of effectiveness of operational procedures, such as feathering of blades or voluntary temporary shutdowns that might reduce impacts of wind turbines on wildlife (Barclay et al. 2007; Cryan and Brown 2007; Horn et al. 2008; Kunz et al. 2007a; National Research Council 2007.*

Adaptive management, including potential operational modifications in response to adverse bat mortality, is discussed in FEIS Section 6.17.4.

> *(j) Implementation of scientific peer-review of all aspects of wind-energy development (U.S. Fish and Wildlife Service, 2003; Government Accountability Office 2005; Kunz et al. 2007b; National Research Council 2007).*

The Stony Creek studies have been reviewed by regulating agencies and have been made available to the public.

6.16.23 West Nile Virus (096, 122, 143, 162, 219, 256, 200, 337)

Invenergy says that post construction studies spring and fall at the 10 Wethersfield turbines has revealed as many as four dead bats. This is small but so are the turbines. But consider this six times as many turbines, 400 footers yet, six times as many dead bats or 24 dead bats, each bat eats approximately 3000 mosquito's per night. That means 720,000 survive to spread disease using just their figures which most experts conclude are woefully under estimated, over 10 years that's at least 720,000 more potential cases of Nile Virus. (Submittals 096 – Dylag, M.; 122 – Orlowski, Joseph; 143 – Dickinson, Darryl; 162 – Dickinson, Mary; 219 – Evans, Ralph; 256 – Lomanto, Ron and Lynn)

Year round there is the bat population in Orangeville that over the centuries has proven to be very significant to the welfare of humankind. As you are aware, bats consume those pesky misquotes that can cause grave illness such as west nile virus. (Submittal 200 – Makson, Paul and Linda)

Project will create an environment that kills bats as they near turbine blades, ultimately reducing mosquito control. (Submittal 337 – Ramsey, Gerald and Donna)

Response: Bat species present in the Project Area are selective feeders (i.e., they don't eat all flying insects in accordance with their abundance). Contrary to popular belief, although mosquitoes are found in the diet of bats, they "seldom form an important component of the food of bats".[87] Reasons for this may include the mosquito's tendency to stay close to vegetation rather than flying in more open areas where bats forage, and their relatively low mass/nutritional content relative to larger available prey, and relative to the foraging energy required to capture the prey. Most mosquitoes consumed by bats described in a 1998 paper were likely from male mosquito swarms (it is female mosquitoes which "bite" humans).[88] Whitaker and Long surmised that bats have little to no impact on mosquito control. Assuming numbers of bats killed by the Project are as predicted in the DEIS, the resulting change in local mosquito populations would likely be immeasurably small.

6.16.24 Sheldon Fatalities (096, 122, 143, 162, 219, 256)

This is not scientific, their study should have Sheldon figures, it does not ....Why? None dead in the spring, four dead bats in fall. How about the years studied, Fall and Spring. When did it start and end. If there any intent to study this before construction to more accurately project post construction mortality? (Attachment: American Thinker article) (Submittals 096 – Dylag, M.; 122 – Orlowski, Joseph; 143 – Dickinson, Darryl; 162 – Dickinson, Mary; 219 – Evans, Ralph; 256 – Lomanto, Ron and Lynn)

Response: Post-construction fatality statistics from Sheldon are discussed in FEIS Sections 4.17 and 6.15.5.

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[87] Whitaker, J. and B Lawhead. 1992. Foods of *Myotis lucifugus* in a maternity colony in central Alaska. Journal of Mammalogy 73:646-648; and Whitaker, J. 2004. Prey Selection in a temperate zone insectivorous bat community. Journal of Mammalogy (85):460-469.

[88] Whitaker, J. and R. Long. 1998. Mosquito feeding by bats. Bat Research News 39(2):59-60.

6.16.25 Maple Ridge Fatalities (276)

This is one of the hard ones to talk about because it is hard to locate bats. It isn't like bird watching, so a lot of this has to be done by the studies that are in the DEIS. To start with, we know without a doubt that wind turbines kill bats. Recent post construction studies at a 120 turbine project on the Tug Hill plateau in New York State found nearly 6,000 bats killed over the same year. The bats sonar may signal safe passage ahead just as the turbine blades suddenly cuts them in half. Research currently indicates that buts suffer collision fatality at some level and a large percentage of the incidents have occurred during the fall migratory. As significant additional wind development is planned in this area, we will be seeding overall bat impacts that have the potential to become very, very substantial. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: An analysis of cumulative effects to bats, including fatalities caused by interactions with wind turbine blades and White Nose Syndrome is provided in FEIS Section 0. Potential causes of bat collisions with wind turbines are discussed in FEIS Section 6.16.34.

Actual mortality rates are below that provided by the commenter. Table 44 summarizes results of three years of bat fatality studies performed at Maple Ridge.

Table 44. Bat Fatalities at Maple Ridge

Statistic	2006	2007	2008
Bat Fatalities Found	326	245	216
Estimated Fatality Rate (bats/turbine/year)	24.5	13.8	8.9
Turbines Operating	120	195	195
Extrapolated Fatality Rate (bats/year)	2,943	2,691	1,735

Notes: Fatality rates assume no fatalities occur in winter months. For years in which the study report calculated different fatality rates, the highest predicted rate is shown. Data from reports prepared by Curry and Kerlinger LLC (Jain et al.) for PPM Energy and Horizon, dated 6/25/2007, 5/6/2009, and 5/14/2009.

6.16.26 Letchworth Bat Hibernaculum (276)

Letchworth State Park in an old railroad tunnel, there is a bat hibernacula. Have the study included this? No, they haven't. We are losing bats faster than ever before. We need to stop and slow now and do the studies right, not just so they can get what they want. (Attachment: New Scientist; NYSDEC info on white nose syndrome; Wikipedia article; misc. info regarding wind turbine size and seismological activity in NY without specific comments.) (Submittal 276 - CSOO - Lomanto, Lynn)

Response: A hibernaculum was identified in an abandoned, dry (unflooded) tunnel associated with the Genesee Valley Canal, in the Letchworth State Park approximate 12 miles east-southeast of the closest turbine (T-59). Meg Janis, Biologist at Letchworth State Park indicated the tunnel is structurally unsound and unsafe to enter. Therefore, no surveys for bats have been completed at the site since January 1982.[89] The 1982 survey identified 2,344 little brown bats, 34 northern long-eared bats, 4 big brown bats, 14 eastern pipistrelles, and 89 unidentified bats.[90] Ms. Janis reports a northern long-eared bat with White Nose Syndrome was

[89] Meg Janis, Letchworth State Park, personal communication, June 18, 2010.

[90] Al Hicks, NYSDEC, personal communication, July 6, 2010.

collected outside the entrance to the tunnel in the Spring of 2010, and Mr. Hicks indicated it is likely the hibernaculum is affected by the syndrome.

6.16.27 Not Enough Migratory Tree Bats Found (278)

Bats are discussed in DEIS Section 3.5.4. Bat activity was recorded by acoustic detectors placed on trees and the meteorological tower in the project area. However, the data indicate a bias in the number of calls detected at one or more site due to location. Recorded species composition may also have been affected and therefore may not necessarily represent the species using the project site or those that may be impacted by the project. It appears that migratory tree bats may have been under represented in the sample but we would expect a large proportion of bats killed by turbines at this site to be tree bats. (Submittal 278 – US Dept of the Interior)

Response: Preconstruction acoustic monitoring provides an estimate of bat use at a site, as the number of bat passes per detector night. Since this metric is widely used in preconstruction bat studies, bat use can be compared among sites and is used to assist with to develop a risk profile for a given site. Detectors are commonly placed on the project's meteorological towers so that bat use is sampled within the proposed development area. Additional detectors are usually placed at locations where biologists believe bat use is high (e.g., forest edges, stream corridors). The number and species of bats detected will vary with placement of the detectors. Placement of the detectors in the 2008 study was coordinated with the NYSDEC, and included meteorological tower sites plus a forest edge site.

Stony Creek agrees with the comment that tree bats are most likely to be impacted by the Project.

6.16.28 Clarification: Definition of "Summer" (291)

DEIS P 93, second paragraph under On-Site Bat Surveys: One should be careful using the word 'summer'. It would be better to give actual dates of peak activity. The dates used to designate seasons were not in accordance with the Wildlife Study Plan (Fall 15 July-I5 October). Had the studies used these dates, then peak activity would have occurred in 'fall'. (Submittal 291-ABR)

DEIS P 94, first bullet item: 20 August is too late in the season to appropriately discuss fall migration. (Submittal 291-ABR)

Response: Improved text for page 93 reads: "…indicated that bat activity in the Project Area peaked during the survey periods from 1 July through 31 August (see DEIS Appendix C.7)."

Peak mortality at wind farms is thought to be associated with migratory bats, and as demonstrated by the activity levels detected in Stony Creek's acoustic surveys, the onset of migratory behavior in the Project Area begins prior to 20 August. The 2008 field studies were conducted between 5 April and 31 May; and between 1 June and 4 November. These summer/fall dates are appropriate to capture the onset of autumn migration.

6.16.29 Clarification: Order of Bat Discussion (291)

DEIS P 94, third bullet item: It is confusing to begin discussing the fall 2008 study, then switch to the summer results. It may be better to separate the study periods as done in the previous paragraphs. (Submittal 291-ABR)

Response: Comment noted.

6.16.30 Attracting Bats (291)

DEIS P 96: The creation or enhancement of edge habitat is likely to bring in more bats because it creates better foraging opportunities. So, although the habitat may not be suitable for roosting, and therefore bats may not be disturbed during construction, the overall effect of altering the landscape may increase bat activity. More bats = more opportunities for bat/turbine interactions. (Submittal 291-ABR)

Response: Given the substantial amount of edge habitat – between wooded areas and open areas – now present in the Project Area, the changes proposed as part of construction of the wind farm will constitute a very minor change in the cumulative total of ecotone in the vicinity of the project.

6.16.31 Clarification: Bat Reproductive Season (291)

DEIS P 96, third paragraph under Operational Impacts: More appropriate to say reproductive season. During summer female bats give birth and nurse their young. Breeding actually occurs in fall when bats migrate. And as you mentioned this is the time when they are most vulnerable. (Submittal 291-ABR)

Response: Acknowledged. The summer months are better referred to as the "reproductive season" or the "maternity season."

6.16.32 Clarification: Bat Roosting (291)

DEIS P 98, first bullet item: Bats do not nest, they roost. (Submittal 291-ABR)

Response: Improved wording reads: "…schedule to avoid interrupting maternity activity at identified maternity roosts."

6.16.33 Return of Bats after Construction (291)

DEIS P 96, Construction Impacts: This sentence sounds so definitive and implies that animals will return after construction. If and how "animals" respond to disturbance is species specific and highly variable - consider rewording sentence. (Submittal 291-ABR)

Response: Acknowledged. Most animals with sufficient mobility which are disturbed by the project construction will likely be temporarily displaced. Because human presence/activity and related disturbance is relatively common in the Project Area, and because of the existing vegetation types (see for example Section 3.0 of DEIS Appendix C.2), Stony Creek expects that species highly susceptible to disturbance-related effects would be absent or very uncommon in the Project Area.

6.16.34 Causes for Bats-WTG Collisions (291)

DEIS P 98, second paragraph: This paragraph doesn't acknowledge some of the basic hypotheses regarding why bats may collide with turbines (e.g., attraction, etc) and this should be added to this section. (Submittal 291-ABR)

Response: Acknowledged. Possible reasons why bats may collide with turbines is provided in the quote below.

> "Several plausible hypotheses have been proposed to explain why bats are killed by wind turbines (Table 1-1). Bat fatality appears to be higher during late summer and fall when bats begin autumn migration (Fleming and Eby 2003) and migratory species (e.g., hoary bat, red bat, and silver-haired bat) comprise the majority of fatalities at all wind farms studied to date (e.g., Erickson et al. 2002, Kerns and Kerlinger 2004, Johnson et al. 2005, this report). If migratory species use linear corridors (Humphrey and Cope 1976, Timm 1989), wind farms located on ridges, or where corridors are created in forests, then bat fatalities may increase during migration or while foraging. If migrating bats do not echolocate they could fly directly into turbines without detecting them, but there is no evidence to support this. Other logical hypotheses center on visual or acoustic attraction or failure by bats to detect turbines (Table 1-1). All of these hypotheses lack empirical data and warrant further investigation."[91]

6.16.35 Editorial (291)

DEIS P 98, third bullet item [in the sentence "This mitigation can a significant impact to project revenues"]: do you mean "add"? (Submittal 291-ABR)

Response: The final sentence of the section should read: "Although in some locations this mitigation measure has been shown to reduce bat fatalities, this modification of turbine operation can in some circumstances significantly affect project revenues."

6.16.36 Others Myotid bats (291)

DEIS Appendix C2, Initial Review, Section 5.1, first paragraph, page 9: List other Myotis spp. (Submittal 291-ABR)

Response: Four of the nine species of bats known to occur in New York State are Myotids. The four are Indiana bats, (*Myotis sodalis*), northern bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), and the small-footed bat (*Myotis leibii*).

6.16.37 Sheldon Bat Species (291)

DEIS Appendix C2, Initial Review, Section 5.1, third paragraph, page 9: It would help to have a brief description of the % of calls by species or species group, and timing of highest activity (e.g., Aug-Sept). (Submittal 291-ABR)

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[91] Arnett et al. 2005. Relationships between bats and wind turbines in Pennsylvania and West Virginia. Unpublished report submitted to the Bats and Wind Energy Cooperative.

[This comment refers to statements in Appendix C2 about the three seasons of pre-construction bat monitoring that was done at the High Sheldon Wind Farm.]

Response: A summary of the species observed and the detection rates per species and per season at High Sheldon is provided in FEIS Appendix A.4.g.

6.16.38 Usefulness of Sheldon Pre-Construction Bat Surveys (291)

DEIS Appendix C2, Initial Review, Section 5.1, third paragraph, page 9: Survey intensity (e.g., number of sampling stations, study duration) of the High Sheldon study is inadequate to describe bat activity at the study site. (Submittal 291-ABR)

Response: Comment noted. The Sheldon information in DEIS Appendix C2 is still useful for consideration.

6.16.39 Handheld Bat Detectors (291)

DEIS Appendix C2, Initial Review, Section 5.1, fourth paragraph, page 10: Active monitoring provides limited information. Although you can record higher quality calls with active monitoring, this methodology does not provide useful data with respect to variation in bat activity within a night or among nights, which might be useful when considering mitigation options. (Submittal 291-ABR)

Response: Comment noted.

6.16.40 Bat Mortality at Original Wethersfield Wind Project (291)

DEIS Appendix C2, Initial Review, Section 5.2, second paragraph, page 10: 8 bats/MW, 8 bats/turbine, or 8 bats/year? (Submittal 291-ABR)

Response: The comment refers to a discussion of bat mortality at the original 10-turbine Wethersfield Wind project. The estimate is that mortality at this project is 8 bats for the full project for fall 2005. The text from the source E&E 2007 report is provided below.

> "Extrapolated estimates of bird fatalities based upon scavenger uptake and searcher efficiency could not be calculated because zero dead birds were found in spring and fall. An extrapolated estimate of bat fatalities could be calculated for fall based on scavenger uptake but not based on searcher efficiency as no test bats were searched for. The fall scavenger uptake factor for bats was 0.5, based on two of the four dead bats disappearing in less time than the search interval (2 days). Therefore, the extrapolated estimate of bat fatalities during the fall 2005 search period based on scavenger uptake is eight."

6.16.41 Correlating Bat Mortality to Pre-Construction Data (291)

DEIS Appendix C2, Initial Review, Section 7.0, fourth paragraph, page 13: It is doubtful that pre-construction activity will relate to post-construction fatality. Alterations in landscape conditions (e.g., clearing of forest habitat) and construction of turbines may attract bats to the area, thus changing overall bat activity. There also is the potential of yearly variations in climate that may confound pre- and post-construction data. Comparisons between post-construction activity and post-construction fatality may be more meaningful. It also is important to consider the activity

and fatality of specific species or species groups rather than discussing bat activity and bat mortality. Bat activity in the area is likely dominated by Myotis spp. whereas fatalities are mostly comprised of migratory tree-roosting bats. (Submittal 291-ABR)

Response: Acknowledged. Based on knowledge at this time, pre-construction surveys cannot be used to definitively predict bat mortality. The statement in the DEIS Appendix was intended to convey it is useful to have the pre-construction data, because if the Project is built, comparisons could be made between pre-construction and post-construction mortality with the goal of developing a correlation or more knowledge on this subject.

6.16.42 Pre-construction Bat Surveys at Other Sites (291)

DEIS Appendix C2, Initial Review, Appendix A, Table 2: Providing more context to this table will help determine the importance of these values. Including number of detectors, number of stations, detectors/stations, # detector nights will help the reader better understand what these numbers mean. (Submittal 291-ABR)

Response A table describing the requested information for one of the wind farms in the subject table is provided in FEIS Appendix A.4.g.

6.16.43 2007 Bat Activity (291)

DEIS Appendix C4, Fall Bat Migration Survey, Executive Summary, fourth paragraph, page E1: There is only 1 detector operational at any given time. One cannot discuss migration activity and patterns of bats within an area with only 1 detector. (Submittal 291-ABR)

Response: Although additional data may be desirable, the collected data have intrinsic value. Additional data were collected in similar acoustic surveys completed in 2008.

6.16.44 Acoustic Survey Results (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 1.1, first paragraph, page 2: Because the anabat system makes it difficult to distinguish among species, it is not appropriate to state your surveys provided baseline species diversity. One should report data on species guild diversity. (Submittal 291-ABR)

Response: Stony Creek concurs with the comment.

6.16.45 Clarification: Bat Survey Statistics (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.3.2, fifth paragraph, page 15: What are these numbers? Correlation, Temp, Wind speed, etc. (Submittal 291-ABR)

Response: The numbers in question are R values for a regression analyses between the variables outlined in this section of the fall 2008 report.

6.16.46 Seasonality of Bat Activity (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.4, first paragraph, page 16: The lower call rate for the lower detector is likely due to the lateness of the season. (Submittal 291-ABR)

Response: Acknowledged.

6.16.47 Clarification: Bat Detector Height (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.4, sixth paragraph, page 18: Are you referring to results from other studies? This is the first mention of a 1.5 m detector for this study. (Submittal 291-ABR)

Response: The mention of a 1.5m detector was an error. The fall 2007 study involved two detectors: one at approximately 22m and one at approximately 44m.

6.16.48 Hourly Variations in Bat Activity (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.4, eighth paragraph, page 19: It is inappropriate to pool data from High & Low detectors to look at differences in hourly movement rates. Please clarify. (Submittal 291-ABR)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.5, first paragraph, page 19: Please see comment above regarding the hourly distribution of bat activity over time (Submittal 291-ABR)

Response: The data from the high and low detectors were pooled to assess hourly activity in the Project Area as a whole. Other regional studies commonly combine hourly activity at high and low met tower detectors for summarizing hourly activity (though when a tree detector is deployed, hourly activity results are often reported separately between tree and meteorological tower detectors).

For the fall 2007 report, the summary of hourly data is available per detector as well (see Figure 15 and Figure 16 below). The high detector observed a large pulse in activity 2 hours after sunset and a small pulse of activity just before dawn, while the low detector experienced a pulse earlier in the night and no pulse just before dawn. The majority of calls at both detectors were recorded before 11:00 pm and declined for the remainder of the night. The lack of activity in the dawn hours at the low detector is likely a result of seasonally colder temperatures.

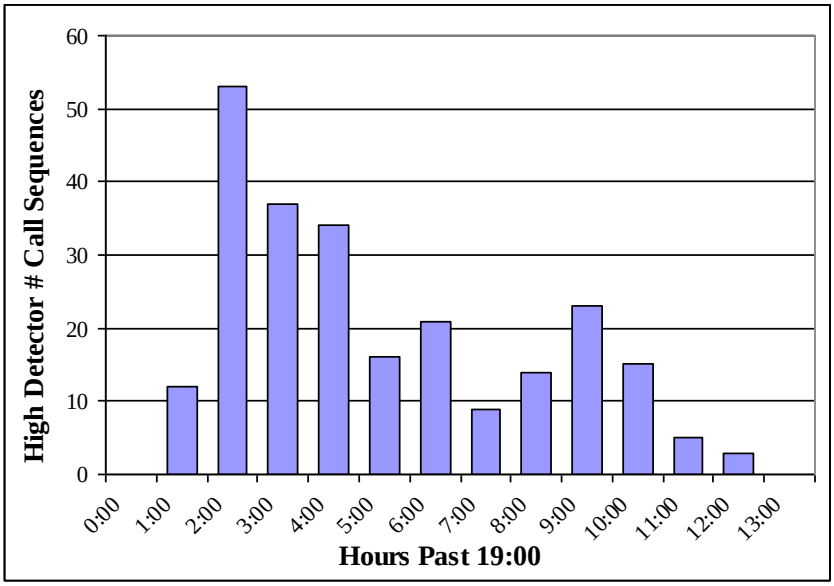

Figure 15. Hourly distribution of bat calls recorded by the high detector during the fall 2007 survey period.

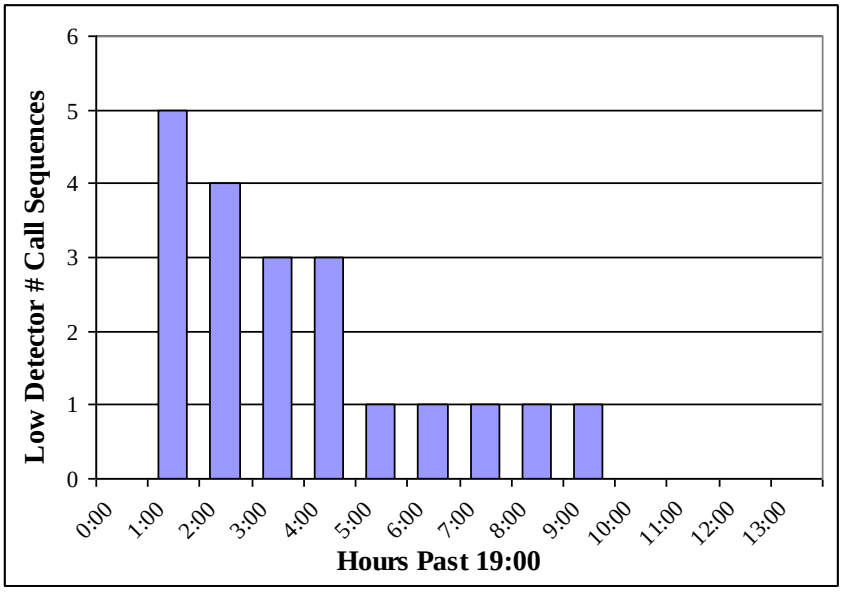

Figure 16. Hourly distribution of bat calls recorded by the low detector during the fall 2007 survey period.

As discussed in FEIS Section 6.16.12, it is agreed that the data should have been processed by activity relative to “civil sunrise” and “civil sunset” because the time the sun sets and rises changes over the course of a survey season.

6.16.49 Number of Bat Detector Locations (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.5, first paragraph, page 19: It is not appropriate to discuss bat activity across an area the size of this project based on 1 recording station. (Submittal 291-ABR)

Response: Stony Creek concurs with the comment. We believe however that the data has value. The number of detectors required to ***sample*** an area at an acceptable level is not specified in the New York Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects (NYSDEC 2009), and the issue remains unresolved in numerous other states as well.

6.16.50 Correlation of Bat Activity to Temperature and Wind Speed (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.5, first paragraph, page 19: The correlations are very weak. Therefore this statement may be incorrect. (Submittal 291-ABR)

Response: Stony Creek concurs that the correlation between mean nighttime temperature and bat activity in the fall 2007 study was not strong. The statement should have been more accurately written as "….and data indicated a possible correlation between bat activity and temperature and wind speed."

6.16.51 Similarity of Fall 2007 Results to other WNY Bat Surveys (291)

DEIS Appendix C4, Fall Bat Migration Survey, Section 2.5, second paragraph, page 19: It may be inappropriate to make broad comparisons with other studies given the problems in this study (i.e., high & low detectors running at different times of the study, only 1 sampling location in the project area). (Submittal 291-ABR)

Response: The intent of the statement in DEIS Appendix C.4 was to point out that based on data collected, nothing indicated the Stony Creek site was atypical compared to other sites in Western New York.

6.16.52 Clarification: Define "Recording" (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Executive Summary, fourth paragraph, page E1: this is not a standard metric - need to define "recordings" to eliminate ambiguity (Submittal 291-ABR)

Response: Where the report refers to 18.9 recordings/detector/night it could probably have also used the term 18.9 calls/detector/night. Both refer to the same metric. Analysis of calls and recordings is discussed on pages 7 through 9 of the report.

6.16.53 Figure on Tree Bat Activity (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Figure 2.11, page 17: I like the addition of this figure. Since these appear to be the most vulnerable species, its important to discuss these separately from other species. (Submittal 291-ABR)

Response: Comment noted.

6.16.54 Clarification: Bat Names in Figure Title (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Figure 2.11, page 17: and Lasionycteris (Submittal 291-ABR)

Response: An improved title for the figure is: Figure 2-11. Nightly detections of *Lasiurus borealis* (LABO), *Lasiurus cinereus* (LACI), and *Lasionycteris noctivagans* (LANO) at Stony Creek met tower detectors from June through September, 2008.

6.16.55 Weather During Acoustic Surveys (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Section 2.3.2, first paragraph, page 20: Should also discuss weather patterns by season. (Submittal 291-ABR)

Response: For the spring period (June 1 to August 14), mean nightly wind speeds at the north met tower varied between 1.8 and 10.7 meters per second (m/s), with an overall nightly mean of 6.9 m/s during this period. Mean nightly temperatures varied between 3.8°C and 24.1°C, with an overall nightly mean of 15.9°C.

During fall (August 15 to November 4), mean nightly wind speeds at the north met tower varied between 0 and 13.5 m/s, with an overall nightly mean of 6.8 m/s during this period. Mean nightly temperatures varied between -2.1°C and 20.1°C, with an overall nightly mean of 10.7°C

6.16.56 Bat Migration (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Section 2.4, second paragraph, page 22: It may be more likely that bats are foraging more often at lower altitudes (in and around the RSA) at lower wind speeds and possibly migrating at higher altitudes (above the RSA) during periods of greater wind speeds. (Submittal 291-ABR)

Response: Comment noted. Bat behavior during migration remains largely undocumented.

6.16.57 Wind Speeds and Bat Activity (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Section 2.4, second paragraph, page 22: Lower wind speeds, not only make it easier to maneuver, but insect activity is likely higher (Submittal 291-ABR)

Response: Comment noted. The availability of flying insects is commonly higher at low wind speeds.

6.16.58 Relatively Numerous Calls at Stony Creek Relative to Other Sites (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Section 2.4, sixth paragraph, page 23: They are only comparable with 2 other sites. 1 would still say these are well above the average for the region. (Submittal 291-ABR)

Response: Data from the Stony Creek met tower detectors is comparable to the met tower data from other regional sites. It is agreed that the Stony Creek tree detector data is relatively high among other sites in this table. However, an important factor to consider when interpreting regional data from this table is the range of survey dates for each study site. Few other studies in this table incorporate surveys starting in June; rather most surveys included in

this table started in August or September. There are seasonal differences in bat activity which may have contributed to the differences among reported detector rates. It is likely that detectors in other studies were affixed to met towers, rather than to trees at the edge of fields. We suspect this difference is the primary cause of the higher rate of detections from the tree detectors at Stony Creek. Additionally, the results of bat detector surveys in general should be interpreted with caution as call sequences cannot be differentiated for individual bats, and multiple calls may represent multiple passes of the same bat(s) foraging in the area.

6.16.59 Bat Call Rates Versus Median Regional Results (291)

DEIS Appendix C7, Summer and Fall 2008 Surveys, Section 2.4, sixth paragraph, page 23: This rate is much more comparable with activity in the region (i.e., more studies report low detection rates). Also, it would probably be more meaningful to compare these to the median rate in the region. (Submittal 291-ABR)

Response: The detector rates recorded at the South and North met ***tree detectors*** are above the average of the rates in DEIS Appendix C.7, Table 2-4 (average = 20.25 call per detector night). Detector rates at the north tree detector were about 7.3 times the median, and at the south tower about 14.7 times the median rate (4.7) at other tree-mounted detectors in the region.

For the regional ***met tower*** detection rates listed in DEIS Appendix C.7, Table 2-4, the average is 2.92 calls per detector night, and the median is 1.65 calls per detector night. Stony Creek rates are below the average rate, but not all of the Stony Creek rates are below the median rate. Table 45 shows how the Stony Creek results compare to this median detection rate.

Table 45. Bat Detection at Stony Creek Met Towers Compared to Regional Rates

Stony Creek Tower	Detector Position	Stony Creek Detection Rate in Summer 2008	Stony Creek Detection Rate in Fall 2008	Percent of Regional Median Detection Rate (1.65)
north	high	2.6		158%
north	low	3.1		188%
south	high	1.0		61%
south	low	2.1		127%
north	high		1.4	85%
north	low		1.4	85%
south	high		0.2	12%
south	low		0.6	36%

6.16.60 Construction Impacts to Bats (278)

Construction impacts to bats are discussed on DEIS Page 96, but the DEIS does not address the potential for direct effects to bats from construction activities (loss of occupied roosts, noise, dust, lighting, etc.). At a minimum, we recommend minimizing forest impacts and conducting all tree clearing activities during winter months (November to March) when bats would not be roosting in any of the forest areas. (Submittal 278 – US Dept of the Interior)

Response: The potential for these effects is acknowledged. As discussed in FEIS Section 4.10, Stony Creek has adjusted the turbine locations to minimize impacts to forest areas. 17 of the proposed 59 turbines are in forest areas, and the total area of forest impacts is estimated to be 76.1 acres. Portions of this area may include younger trees with less suitable roosting habitat for bats and other parts may include older, mature forest with better habitat for bats.

To minimize impacts to bats, Stony Creek will, to the extent practicable, perform clearing of older, mature trees in the winter months of November, December, January, February, and March.

6.17 Post Construction Monitoring for Birds and Bats

6.17.1 Number of Years of Ground Searches (278, 382)

Ground searches are likely to be recommended for the second year of monitoring, which would include searching for and recording carcasses of both bats and birds, regardless of the first year's estimated per turbine impact for each group. NYSDEC is willing to discuss alterations to the timing, search frequency, and duration of ground searches, upon review of the first year's results. (Submittal 382– NYSDEC)

Post-construction bat and bird mortality monitoring should occur for a minimum of 3 years. (Submittal 278 – US Dept of the Interior)

Response: Comments noted. Stony Creek will perform post-construction monitoring for a period of three years as recommended by the USFWS and the NYSDEC. The updated Post-Construction Monitoring Plan in FEIS Appendix A.3.c includes text describing how the second and third years of studies may be adjusted depending on the level of mortality found in previous year(s).

6.17.2 Adjustments for Impacts to Listed Species (382)

The proposed adjustments to the monitoring plan do not include consideration for impacts to state and federally listed species, large mortality events occurring in one night or involving one species or group of species, or other unexpected impacts from the operation of the project. (Submittal 382– NYSDEC)

Response: No impacts are anticipated to state- or federal-listed species. However, if a state- or federal-listed species fatality occurs at the Project, as required by law, Stony Creek would report the fatality to the state or federal authorities, as appropriate.

As of the date of this FEIS, the NYSDEC new regulations that require developers of new projects to consult with the NYSDEC on whether a proposed activity will likely result in a Take of species that are listed New York State as either Threatened or Endangered, and to obtain an Incidental Take Permit if the NYSDEC determines a Take is likely. If the NYSDEC determines that the Project will likely result in a Take, then Stony Creek will work with the NYSDEC to apply for and obtain a New York Incidental Take Permit.

Large mortality events occurring in one night have been recorded at telecommunication towers, but not at wind farms. Accordingly, such events are not expected to occur at the Stony Creek Wind Farm, and no mitigation is necessary.

6.17.3 Coordination with US FWS (278)

If the project proceeds, the Service recommends that the site be monitored for impacts to wildlife following construction and during turbine operation. Post-construction bat and bird mortality monitoring should occur for a minimum of 3 years. Proposal for conducting monitoring should be coordinated with both the Service and the NYSDEC to ensure they are comprehensive, accurate and correctly timed. Information gained from post-construction monitoring will continue to aid the Service and project sponsors as we learn more about potential impacts or lack thereof to wildlife in the project area. Monitoring should also be part of a strong adaptive

management program for the project. We recommend that project approval not be given until after the details of the post construction monitoring plan and adaptive management program have been reviewed and approved by the service and the NYSDEC. (Submittal 278 – US Dept of the Interior)

Response: Stony Creek has proposed a post-construction monitoring plan for birds and bats that is consistent with NYSDEC guidance issued in September 2009. This was provided as an appendix to the DEIS.

The updated plan provided in FEIS Appendix A.3.c provides appropriate requirements to monitor and potentially mitigate impacts. FWS and NYSDEC are welcome to further review this plan and to work with Stony Creek on revisions, provided they do not result in conditions that lessen the information or potential mitigation than is accomplished by the plan included with this FEIS.

The number of years of post-construction surveys is discussed in FEIS Section 6.17.1. Adaptive management is discussed in FEIS Sections 6.17.4, 6.17.5 and 6.17.6.

6.17.4 Adaptive Management for Bats (278)

On Page 98, the project sponsor commits to operational restrictions on turbines to limit bat fatalities. Recent research has indicated that minor operational adjustments in cut in speeds can greatly reduce fatalities (Arnett et al 2009). We recommend that the Lead Agency require the project sponsor to use a cut in speed that reduces bat mortality as a mitigation measure. In addition, we are continuing to learn more about possible ways to avoid or minimize impacts to bats from turbine operations, the mitigation should include a strong adaptive management component with clear triggers to implement various strategies. This project should be developed prior to completion of the FEIS. (Submittal 278 – US Dept of the Interior)

Response: Contrary to what is written in submittal 278, on DEIS page 98 Stony Creek did not commit to operational restrictions on turbines. Instead, Stony Creek stated that if bat collisions were a concern to the Lead Agency then one possible mitigation measure would be operational restrictions.

Pre-construction studies suggest the Project will not affect endangered bats, so operational restrictions are not required.

Stony Creek however, has modified its proposed post-construction monitoring plan to contain provisions to adopt operational restrictions if, based on actual post-construction collision data, it is concluded by Stony Creek in consultation with the NYSDEC that the Project is having an unacceptable impact to bats. The updated post-construction monitoring plan is provided in FEIS Appendix A.3.c.

Previous studies have documented that the majority of bat fatalities at wind turbines occur during low wind speeds during late summer and fall migration periods.[92] There are only three known turbine operation/bat fatality studies conducted to date, one each from the U.S.,[93]

[92] Arnett et al 2008.

[93] Arnett et al 2008, 2009.

Canada,[94] and Germany.[95] All three research studies evaluated the effects of increasing the wind speed at which turbines blades begin rotating and producing power (the turbine cut-in speed) on estimated bat fatalities and indicate that the number of bat fatalities can be reduced by curtailing turbine operations at low wind speeds. While these studies indicate that increased cut-in speeds can be effective at reducing bat fatalities, curtailment results in lost operating hours and thus a reduction in the benefits of generating electricity using clean, renewable wind power and increased operating costs. Therefore, curtailment should be considered as a mitigation for bat fatalities only if observed levels of bat fatalities are deemed unacceptable.

6.17.5 Adaptive Management for Raptors (278)

We recommend the Town condition project approval with provisions for modifying turbine operation if post-construction monitoring indicates mortality higher than other projects in the region. (Submittal 278 – US Dept of the Interior)

Response: As discussed in FEIS Sections 6.15.20 and 6.15.21, raptor mortality at Stony Creek is not expected to be biologically significant. An updated Post-Construction Monitoring Plan with more specific criteria for adaptive management is provided in FEIS Appendix A.3.c.

6.17.6 Adaptive Management for Birds and Bats (341)

DEIS Appendix C-3 and C-4: Mitigation of impacts to bird and bat population should include commitment to adaptive management strategy to reduce project operational effects if significant effects are observed in post construction monitoring survey. (Submittal 341 – NYS Dept of Public Service)

Response: Adaptive management for birds and bats is discussed in FEIS Sections 6.17.4 and 6.17.5.

6.17.7 Cost of Adaptive Management (291)

DEIS P 98, third bullet item: These studies should a relatively low impact to revenue (-0.3%-1% of annual output; Arnett et al. 2008) (Submittal 291-ABR)

Response: The cost of mitigation measures based upon the feathering of turbine blades is a function of project-specific wind regimes, and numerous other very specific attributes of the feathering program (e.g., duration, season, time of day/night, wind speeds during feathering events). The data concerning lost power output referred to by the commenter is specific to a particular approach to blade feathering, and the wind regime at a particular location (Casselman Wind Farm in Somerset Co., Pennsylvania).[96]

Stony Creek has evaluated potential losses of electricity generation for various adaptive management scenarios at the Stony Creek site. Implementation of adaptive will reduce electric output at Stony Creek, will reduce the competitiveness of the Project, and, in the long run, will result in higher costs to ratepayers for renewable energy. To balance these concerns against the

[94] Baerwald et al 2009.

[95] O. Behr, University or Erlangen, unpublished data.

[96] Effectiveness of Changing Wind Turbine Cut-in Speed to Reduce Bat Fatalities at Wind Facilities, Arnett et al. 2009.

need to mitigate potential environmental impacts, Stony Creek has proposed adaptive management conditions (in the Post-Construction Monitoring and Adaptive Management Plan) that include maximum hours that will help Stony Creek bound the hours of adaptive management.

6.17.8 Due Date for Reports (382)

Post-Construction Monitoring Plan should specify that final reports should be submitted no later than January 31 of the year following the end of a survey year. A March submittal date would not provide the resource agencies enough time to review reports, meet with the project sponsor, make any necessary changes to the protocol, and finalize a work plan satisfactory to all parties prior to the next season beginning in April. (Submittal 382– NYSDEC)

Response: Stony Creek has modified Section 4 of the Project's Post-Construction Bird and Bat Monitoring Plan to state that Stony Creek will provide final reports no later than January 31st of the year following the year in which the studies or surveys were performed.

6.17.9 Fatality Data to be Collected (382)

The final report [of the post-construction fatality surveys] should also include information on the date, turbine number, species, and gender (if determinable) of every carcass found. (Submittal 382– NYSDEC)

Response: Section 3.1.8, Field Search Methodology, of the Project's Post-Construction Monitoring Plan indicates that Stony Creek will collect information on the date, turbine number, specifies, and gender (if determinable) for every carcass found, in addition to other information. Please refer to Section 3.1.8 of the Plan for a full list of information to be collected.

6.17.10 Bat Acoustic Monitoring (291)

DEIS Appendix C2, Initial Review, Section 5.2, fifth paragraph, page 11: I would also suggest conducting post-construction acoustic monitoring to examine relationships between activity and fatality after the landscape has been altered and the turbines constructed. (Submittal 291-ABR)

Response: Bat acoustic monitoring is included in the draft post-construction monitoring plan provided with the DEIS and in the updated plan provided in FEIS Appendix A.3.c.

6.17.11 Grassland Bird Surveys (382)

Based on post-construction results at other wind energy sites, NYSDEC has recently been recommending a slightly different type of grassland bird survey for post-construction studies at wind projects than what is described in the Guidelines. An impact gradient study utilizes sets of transects at turbines and control sites to evaluate grassland bird habituation/avoidance behavior and habitat use in wind project areas. Though the use of transects does not exactly replicate the pre-construction survey methods done at Stony Creek, this method should provide a better measure of how birds respond to turbines, rather than provide an index of general species abundance/diversity in the project area. Transects would be surveyed during the same time frame and under the same conditions as BBS-style point counts, and can be used instead of or in addition to point count surveys. The project sponsor should consult with NYSDEC to develop the methods and to discuss other aspects of this study. (Submittal 382– NYSDEC)

Response: Stony Creek will utilize current NYSDEC standards in the post-construction Bird Habituation and Avoidance Study, including replacing some of the point counts with sets of transects, if appropriate, as suggested in the comment. The updated Post-Construction Bird and Bat Monitoring Plan in FEIS Appendix A.3.c includes text changes to clarify the methods of the grassland bird studies may be modified to accommodate future specific protocol requests by the DEC.

6.17.12 Typographical Error: Date on the Plan (382)

Post-Construction Monitoring Plan Stony Creek Wind Farm, Wyoming County, New York, January 7, 2009 (Appendix I, Section 4) - Although it is stated that the work plan is designed based on the August 2009 Guidelines, the document is dated January 7, 2009. (Submittal 382– NYSDEC)

Response: This is a typographical error in the document. The date on the document should have been January 7, 2010. An updated plan is provided in FEIS Appendix A.3.c.

6.18 Wildlife Other than Birds and Bats

6.18.1 CSOO Observations of Frogs, Turtles, Snakes (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

There are going to be major impacts to these animals. These animals are very sensitive to any changes in the environment. We have found the following frogs and turtles.

American Toad	*Snapping turtle*	*Northern Red Belly Snake*
Gray Tree Frog	*Painted turtle*	*Gater Snake*
Bullfrog	*Spotted Turtle – Threatened*	*Brown Snake*
Green Frog	*Wood Turtle - Special Concern*	*Milk Snake*
Wood Frog		*Water Snake*
Spring Peepers		

We can foresee problems with turtles laying eggs in the ground around the wind turbines. We believe that the turtle may be destroyed by the ground vibration of the spinning blades of the turbines. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: Thank you for submitting your observations of frogs, turtles, and snakes in the Project Area. FEIS Appendix A.4.i is a full list of the species identified in submittal 276 and the federal and state status of each. The species identified in Submittal 276 include: 10 amphibian species and 9 reptile species. Both groups are discussed below.

The comment incorrectly assumes that rotation of wind turbine blades will cause perceptible vibrations in the ground. A 2009 study by Epsilon, Associates study of ground-borne vibration measurements made from Siemens 2.3 and GE 1.5sle wind turbines found:

> *The maximum ground-borne vibration RMS particle velocities were 0.071 mm/second (0.0028 inches/second) in the 8 Hz one-third octave band. This was measured 1000 feet downwind from a GE 1.5sle WTG under maximum power output and high wind at the ground. The background ground-borne vibration RMS particle velocity at the same location approximately 20 minutes beforehand was 0.085 mm/sec. Both of these measurements meet ANSI S2.71 recommendations for perceptible vibration in residences during night time hours. Soil conditions were soft earth representative of an active agricultural use. These vibration levels are nearly three orders of magnitude below the level of 0.75 inches/second set to prevent damage to residential structures. No perceptible vibration was felt from operation of the wind turbines. Measurements at the*

other sites and as close as 400 feet were significantly lower than the above measurements under high wind conditions.

Amphibian Species

The CSOO list of amphibians includes two state-listed species: Blue-spotted Salamander and Jefferson Salamander, both of which are New York-listed as species of Special Concern (the comment incorrectly indicates that the spotted turtle is threatened). Jefferson Salamander is discussed in FEIS Section4.1. Stony Creek has undertaken surveys to identify habitat for this species and has modified the Project to minimize impacts.

The CSOO record of the Blue-spotted salamander provides no specific information documenting where or when this species was seen, simply stating that it was located "throughout the Town." If this species is present in the Project Area, its habitat is similar to that for Jefferson Salamander, and the mitigation steps taken by Stony Creek to minimize impacts to Jefferson Salamander will also help to minimize impacts to Blue-spotted Salamander.

The eight other amphibian species listed in the comment (e.g., American Toad, Bullfrog) have no unique status and are considered common. Because none of these species are listed as threatened or endangered at the State of Federal level, because the project has been designed to avoid the wetlands these species live and/or breed in, and because the permanent ground disturbance associated with the Project is minimal, no significant effects to local populations of these species are anticipated.

Reptile Species

The CSOO list of reptiles includes two state-listed species: Spotted Turtle and Wood Turtle, both of which are New York-listed as species of Special Concern. Wood Turtle is discussed in FEIS Section 6.19.25.

The CSOO record of the Spotted Turtle provided no specific information documenting where or when this species was seen. If this species is present in the Project Area, its habitat is similar to that for the Wood Turtle, and the mitigation steps taken by Stony Creek to minimize impacts to Wood Turtle will also help to minimize impacts to the Spotted Turtle.

6.18.2 CSOO Observations of Mammals (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

The datasheets include records of sitings of several mammals, often seen in residents' back yards.

Response: FEIS Appendix A.4.i is a list of all mammals identified in the datasheets provided with submittal 76. The datasheets identify eight different groups/species of mammals: bats, rabbits, squirrels (red and gray), Mink, Red Fox, Virginia Opossum, and Whitetail Deer that are known to occur in the project vicinity. Except for bats, which are not specifically identified in the CSOO submittals and which are discussed in FEIS Section 6.16, none of the mammals identified in the CSOO submittals are listed species, are unique to the Project Area, or should be

significantly impacted by the Project. As discussed in DEIS Section 3.5.2, common species such as gray squirrel and whitetail deer can be expected to adapt easily to the Project.

6.18.3 Many Types of Wildlife (074, 277, 278, 375)

We are concerned with the proposal to construct the project in an area known to be used by many types of wildlife including species of conservation concern. (Submittal 278 – US Dept of the Interior)

Location of vernal pools would be in the North West section of the Stony Creek Project. Significant wetland area.

Many birds, bats, raptors (eagle, hawk, owl, turkey, turkey vultures, Canada geese, palliated wood pecker, egret, sandpiper, a variety of sapsuckers), and amphibian activity, (turtle, frog, Jefferson Salamander)

Elevation is approximately 1,700 ft.

We have observed the great homed owl, screech owl, many deer have their young in this area, along with possum, skunk, red squirrel, and raccoon.

The area of Buffalo Road, Standish Road, and Glor Road are a very sensitive breeding ground. Many wildlife feed and nest hear. Many bats fly, feed and nest in this area. We also hold a crow's rookery in the woods near the projected site of turbine 1,2 and 3. We have a large turkey population and turkey vulture habitat. I have sited a peregrine falcon on several occasions. This is a feeding and nesting area for the Cooper's Hawk, Red Tail and Red Shoulder Hawk. Several of the neighbor's in this area have seen the Golden Eagle and just recently the Bald Eagle was sited. It would be a significant loss if these wildlife and birds and bats lost their nesting and feeding ground. It would definitely be a loss for all who live here and enjoy this serene habitat. I believe that if this project continues it will cause a devastation and loss that will never be recovered.

Further environmental study must be done. This area is a very fragile environmental location. Turbines would have a devastating effect. (Attachment: photographs, 4 pp.) (Submittal 277 - CSOO - Lomanto, Lynn)

Considering the abundant wildlife in our area, Industrial Wind Turbines will have significant adverse impacts on wildlife, wildlife habitat or actual land use by bats, bird and bat migration routes, and other species of conservation concern in Orangeville. The Woodcock, Northern Harrier, Sharp Shinned Hawk, Coopers Hawk and Red Shoulder Hawk, Upland Sandpiper, Homed Lark, Pied-billed Grebe, Osprey, all are in danger and have been confirmed in Orangeville, as has the Bald Eagle I feel these birds, along with other wildlife deserve much more attention and a harder look at the detrimental effects industrial turbines might cause. (Submittal 074 – Wilkenson, Nyla; 375 – Wilkinson, Nyla (verbal))

Response: All wetlands within the Project's expected area of disturbance have been delineated. A report specific to this topic is provided in FEIS Appendix A.6.a.

In general, as described in the DEIS, and based upon a substantial and growing data set from post construction monitoring at other wind farms, operational impacts (bird mortality due to collisions) is expected to be (i) few in number, and (ii) well below levels that would adversely affect populations.

Most species or species groups mentioned by the commenter are common; several species are listed as endangered, threatened, or of special concern by New York State. Of these, effects to Peregrine Falcon, Bald Eagle, Upland Sandpiper, Pied-billed Grebe, Jefferson Salamander, Northern Harrier, Cooper's hawk, and Sharp-shinned Hawk are addressed in the DEIS. Additional studies have been completed since the DEIS was published dealing with bald eagles, Jefferson Salamander, and Northern Harriers in the project area. These studies are summarized in FEIS Section 4.1, 4.6, and 4.8.

Additional special status species mentioned by the commenters include: Golden eagle, Osprey, and Horned lark. Anecdotal evidence of the commenter notwithstanding, there is no evidence of these populations of these species in the Project Area. Specifically, taking each species in turn:

Golden Eagles

The information submitted by CSOO alleges a winter sighting of an immature Golden eagle near a small patch of open water in the largely frozen Attica Reservoir, and in an area approximately 1 mile south of the reservoir generally near turbines T-13 and T-14. This State-listed endangered species was not observed in preconstruction studies completed for the Stony Creek Wind Farm, nor was it reported in Christmas Bird Counts completed in 1996 to 2007 in the general area. The NYSDEC's Golden Eagle Fact Sheet indicates "Although sightings occur every year in New York, most are during migration and no active nests are currently known." The observation in the Project Area, if accurate, was unusual (the observed wintering golden eagle may not be seen in the area again). Even if the birds did return consistently to the area, chances of adverse effects, based upon data from the vast majority of other wind farms, are low.

Red-shouldered Hawks

Red-shouldered hawks, a New York species of Special Concern, are addressed by existing DEIS narrative describing effects to other species in the subsections entitled Construction Impacts to Protected Birds, Operational Impacts to Birds, and Operational Impacts on Protected Birds on DEIS pages 90 and 91.

Osprey

Osprey were not detected in surveys completed in the Project Area by Stony Creek, but had previously been observed in the region and documented in the New York State Breeding Bird Atlas. The diet of ospreys consists nearly entirely of fish, and feeding, breeding, and nesting would be expected to occur at Attica Reservoir, approximately 0.5 miles from the nearest turbine. Thus even if the birds did return consistently to the area, chances of adverse effects, based upon data from the vast majority of other wind farms and given the location of the reservoir, is low.

Horned Larks

Occurrence of Horned Lark in the Project Area and potential impacts to this species are discussed in FEIS Section 6.19.9.

Please refer to Table 41 for a list of all state-listed species identified by CSOO and reference to the FEIS locations where each species is discussed. Other un-listed species are discussed in FEIS Section 6.15.

6.18.4 Deer Harvest (002, 037, 048, 53, 086, 108, 137, 163, 176, 180, 188, 216, 220, 221, 222, 223, 224, 299, 226, 236)

The NYSDEC has reported that Wyoming County has one of the largest decreases in deer take/numbers of anywhere in NYS. Has the reason for this been studied by the NYSDEC, Invenergy or the Town of Orangeville? (Submittals 002 – Humphrey, Peter; 037 – Hathaway, Derek; 048 – Nevinger, James; 053 – Hopkins, Harold; 086 – Burgio, Michael; 108 – Dylag, M.; 137 – Dickinson, Darryl; 163 – Dickinson, Mary; 176 – Malicki, Richard; 180 – Librock, John; 188 – Gebel, James; 216 – Makson, Linda; 220 – Laguisi, Joseph; 221 – Lagudi, Victoria; 222 – Barrett, M.; 223 – Makson, Alisa; 224 – Makson, Frank; 299 – Ramsey, Gerald; 226 – Neringer, Michael; 236 – Nevinger, Mary)

Response: Table 46 lists recent deer harvest statistics for Wyoming County. Examination of NYSDEC deer harvest data numbers in 2007, 2008, and 2009 indicate that 2008 harvest numbers in Wyoming and numerous other New York counties were lower than those in 2007. The 2009 harvest of bucks, and of all deer, in Wyoming County were over 15 percent higher than harvests in 2007.

Table 46. Deer Harvest Statistics for Wyoming County

Year	Wyoming Co. Buck Harvest (change from 2007)	Wyoming Co. Total Harvest (change from 2007)
2007	2388	5750
2008	2216 (-7%)	5179 (-10%)
2009	2740 (+15%)	6667 (+16%)

There is no reason to believe the changes in deer harvest statistics were related to the proposed Project, or that deer harvests would be significantly impacted by Project construction and operation.

Deer populations fluctuate from year to year for a number of reasons. The data from the past three years, which encompass the construction and initial operation of two nearby wind farms, do not support the commenters' statement, nor do they suggest that the deer harvest in Wyoming County has been adversely affected by the construction or operation of wind turbines.

6.19 Rare, Threatened, and Endangered Species

6.19.1 Bald Eagle (098, 127, 145, 161, 197, 255, 269, 270, 304, 274, 278, 280, 382, 276)

Bald Eagle, listed as threatened in New York, has been reported numerous times at the Attica Reservoir located one-half mile away from the Project components. The Region 9 Wildlife Office has eight recorded sightings of Bald Eagle at this reservoir from 1999 and 2008. There is one winter record of a pair of adult eagles there on January 10, 2008. Seven spring and summer records exist from April 19 to August 3 of mostly adult pairs with only one juvenile sighting record. This evidence has prompted regional biologists to conduct aerial searches for a nest at the reservoir in past years. Such a nest, not yet identified, may be located in other forested habitat in the general vicinity of the Reservoir. It is probable that Bald Eagles observed at the Reservoir also utilize nearby Bantam Swamp located to the southeast. Region 9 Wildlife Staff have not completed any searches of that extensive wetland area for a nest or eagle use to date, but will attempt to make observations there in 2010.

Proposed wind turbines T-07, T-08 and T-20 through T-28 located north of Old Buffalo Road are within or just over one mile of the Reservoir and can pose collision risk to Bald Eagles utilizing that area or flying to adjacent Bantam Swamp. Turbines T-20, T-21, T-22, T-26, T-27 and T-28 are located between the reservoir and Bantam Swamp and could pose special risk. (Submittal 382 – NYSDEC)

Red Shouldered Hawks, Peregrine, Falcons, Turkey Vultures, American Kestrels and the Bald Eagle are among some of the dozen or more birds cited in the study as found in our area. We finally have eagles and falcons back in our area and populations considered endangered and in need of protection of other avian. The thought of a 400' industrial wind turbine disrupting the fragile populations of these birds, let alone causing a single "post construction mortality" disturbs me gravely.

I cannot get the image of a bald eagle that they know who frequents the Attica reservoir perched atop a 400 foot turbine that is sitting idly waiting for the wind to pickup, the wind picks up, the eagle is startled, attempts to flyaway, and pow is killed by one of the giant blades. A dead eagle to me a single case of avian mortality to them. (Submittals 098 – Dylag, M.; 127 – Orlowski, Joseph; 145 – Dickinson, Darryl; 161 – Dickinson, Mary; 197 – Makson, Paul and Linda; 269 – White, Robert; 270 – Winstel, Pete; 304 – Ramsey, Donna; 274 – Hammill, Duane; 255 – Lomanto, Ron and Lynn)

The DEIS Section 3.5.3 Birds indicates under "Winter Raptors and Owls" (page 82) includes the statement "No Bald Eagles were observed in either the roadside surveys or in the hikes to the Attica Reservoir even though trees bordering the shoreline of the reservoir were scanned for both presence of these raptors and for evidence of eagle nests." The surveys were completed during January, February, and March 2008. The Project Area was surveyed two days per month during the morning, afternoon and at dusk to determine the presence of wintering raptors and owls.

(Stantec Consulting, 2007 Breeding Bird and Area Search Surveys for the Buffalo Road Study Area in Wyoming County, New York. Prepared for Invenergy Wind North America LLC. October 2007). Two (2) winters have passed since this survey was completed; since then the presence of a pair of Bald Eagles was documented at Attica Reservoir #3 (photographic evidence of the raptors as well as their hunting nest). Should further study on the presence of the raptors, as well as construction and operational impacts, and mitigation to the newly identified species be completed? Is the two (2) year old survey sufficient to characterize the Project Area? Is the recent frequent presence of the Bald Eagle, which is on the state and federal threatened species list, important to the project sponsors? And if so, does the lead agency feel appropriate identification, impacts and mitigation was provided for in the previously prepared studies? (Submittal 280 – Core Environmental)

Birds are discussed in section 3.5.3. Several studies were completed in the project area including a breeding bird survey and raptor surveys conducted in the spring, fall and winter. In addition, a one day survey was completed near the Attica Reservoir to locate any bald eagle nests due to regular sighting of this species. Similarly, a one day playback survey was completed in March 2008 to locate short eared owls. Both of these species are State-listed species and protected by state law. In addition, the bald eagle is protected under the BGEPA. Data from Audubon Christmas Bird Counts reveal the presence of both species as well as 16 other raptors that were identified in the project area, but not identified during surveys conducted by Stony Creek consultants. We have strong concerns about the adequacy of the winter surveys for these species. We also have reservations about the sufficiency of one survey on the Attica Reservoir for bald eagle nests. We believe that one day surveys are typically insufficient to determine the presence of a species and its use patterns of the project area. Without this information, it is difficult to adequately determine the potential project impacts on these species. Therefore, we recommend additional surveys be completed to adequately document species presence and use. (Submittal 278 – US Dept of the Interior)

These pictures were submitted for comment, review and documentation. The bald eagle habitat is located within a large environmental range that includes its hunting area of the Attica reservoir, Krotz Road, Nesbit Road, Glor Road, Buffalo Road, Standish Road, Route 98, Route 20A and Syler Road and locations adjacent to the Attica reservoir. It is important that this area be protected. The Bald Eagle must reside, be left alone and not disturbed. No disturbance tactics should be allowed at any time. The U.S. Fish and Wildlife Bald Eagle Protection Act must recognize that the citizens and residents of Orangeville have located these eagles and will not allow them to be disturbed. The residents of Orangeville know that the Stony Creek turbine project will destroy the bald eagle habitat, nesting area and feeding area and possibly kill this pair of eagles. We strongly believe that the bald eagle is too valuable a resource to waste. Many of the Wyoming County citizens enjoy the privilege of having the bald eagle present in our townships and will not tolerate any harmful disturbance to the eagle. This golden eagle has been spotted in Alexander NY feeding on a deer. Now he is seen at the Attica reservoir by a master birder. (Submittal 276 - CSOO - Lomanto, Lynn)

We have bald eagles that have been seen in the northern part of Orangeville. The Attica reservoir has been where the bald eagles have been seen and one of the places that they feed at. We really don't know if they are nesting at the reservoir or some other place, but we do know that they use this area a lot. With the wind turbine being so close to Attica reservoir, we are very concerned about these threatened birds being killed. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: The Bald Eagle is state-listed as threatened, and it is protected under the federal Bald and Golden Eagle Protection Act. Following publication of the DEIS, additional surveys for bald eagles were completed in 2010 (see FEIS Section 4.8 and Appendix A.4.a). The survey focused on the area around Attica Reservoir No. 3, on Bantam Swamp, and the area between the two. As discussed in FEIS Section 4.8, the surveys found Bald Eagles using the area, but no nests. Surveys were done on six days expected to have high probability of eagle sightings, and an average of one eagle was seen on each day. Bald Eagle use was around the reservoir, north of the Project Area, and 0.75 mile or more from any proposed wind turbine sites.

In submittal 278, the US Fish and Wildlife Service expressed concerns that project-related surveys did not detect certain raptors previously observed in Christmas Bird Counts. Stony Creek conducted quantitative bird sampling to determine raptor use of the Project Area using agency-approved methods.

Based upon results at Stony Creek and at other wind farms, raptor fatalities are anticipated to be few, and well below biological significance in terms of effects to populations. The risk to Bald Eagle is mitigated to the maximum extent practicable by compliance with applicable laws and regulations for protected species, including those that are specific to Bald Eagles.

6.19.2 Golden Eagle (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a printout of a March 21, 2010 email from Kurt and Jeannine Fox that contains an "ebird report" showing that on March 21, 2010 at the frozen over Attica Reservoir 16 different bird species were observed, including an immature Golden Eagle soaring northward at a location approximately 1 miles south of the reservoir.

Response: Golden Eagle is not federally-listed as endangered or threatened, but it is protected under the federal Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act (MBTA) and state-listed as endangered in New York. Golden Eagle was not observed in preconstruction studies completed for the Stony Creek Wind Farm, nor was it reported in Christmas Bird Counts completed in 1996 to 2007 in the general area. The NYSDEC's Golden Eagle Fact Sheet indicates "Although sightings occur every year in New York, most are during migration and no active nests are currently known." The observation in the Project Area, if accurate, was unusual (the observed wintering golden eagle may not be seen in the area again). Even if the birds did return consistently to the area, chances of adverse effects, based upon data from the vast majority of other wind farms, is low.

6.19.3 Short-eared Owl (276, 382)

Surveys were conducted to find Short-Eared Owls within the project area. Although appropriate habitat is present in the area, this species is not known to winter in large numbers within the project area and large impacts are not expected to occur to this species at the Stony Creek project. (Submittal 382– NYSDEC)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E. One of the summary sheets in submittal 276 states:]

We do have a sighting and a calling from the short eared owl in the Town of Orangeville. There were in the Town and Sheldon and must have moved to Orangeville or this is one that has been here. We know that the NYSDEC are contacting a study on these birds right now and feel that more study is needed in this area. There may be more in the Town of Orangeville. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: Short-eared Owl is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is state-listed as endangered. Stony Creek did not observe any Short-eared Owls in the Project Area in any of its five bird surveys conducted between 2008 and 2010. Its 2008-09 winter raptor survey included surveys specifically designed to identify Short-eared Owl, but none were observed. NYSDEC acknowledges completion of surveys for Short-eared Owl presence in Submittal 382.

Short-eared Owls likely occur infrequently in the Project Area, and effects to the species are expected to be low. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.4 Northern Shrike (276)

We have a sighting of a Northern Shirke (sic) in the Town of Orangeville. Below is the Date it was sited: Date of Sighting, Time of Sighting: Feb. 29, 2010, 2:30 pm

These birds like open woodlands and open grasslands with fence posts and scattered trees in the winter. It likes to nest in dense conifers and the Township has plenty of habitat in Orangeville For these birds to make a comeback. We feel that a lot more study of these birds needs to be done. Please see map for location of Northern Shirke (sic). [note: the map provided shows a circle around a location near a residence on Snyder Road, south of Old Buffalo Road] (Submittal 276 - CSOO - Lomanto, Lynn)

Extract from an email dated Feb 28, 2010 from "kimmarie," subject "Northern Shrike at the backyard feeder", included in 276 - CSOO - Lomanto, Lynn :

> *We had an unexpected visitor at our Orangeville birdfeeding area today. At around 2:30pm a Northern Shrike perched on the birch tree, next to our largest feeder (and about 10-12 feet from the house). He/she stayed only about 5 minutes, but long enough to send the local feeder birds into the pines. I was able to get some photos and a nice look through the binoculars.*

Extract from an email dated March 8, 2010 from "kimmarie," subject "Bird list for 2007-2008, 2008-2009, and 2009-2010", included in 276 - CSOO - Lomanto, Lynn :

> *Here is what I have in my records for the past 2 ½-3 years regarding Snyder Road (from RT 20A to Buffalo Road). …..[list of nesting birds]…. [list of "Visitors and fly-overs"]. The list of Visitors and Flyovers includes Northern Shrike.*

Note: No photographs of the reported Northern Shrike were provided with Comment 272.

Response: The Northern Shrike is not federally-listed as endangered or threatened. It is not listed as an endangered, threatened, or special concern species in New York. Stony Creek has not observed Northern Shrike in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

The breeding range of Northern Shrike is northern Canada and Alaska.

From the different submittals, it appears that there is one reported sighting of a Northern Shrike at a bird feeder on February 28, 2010. The other submittals appear to be referring to this one reported observation.

As discussed in DEIS Section 3.4.3, effects of Project construction and operation to Northern Shrike and similar species are not expected to be significant. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.5 Peregrine Falcon (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Peregrine Falcon as a species that migrates through portions of the Project Area. The submittal does not contain a specific record of a Peregrine Falcon siting.

Response: The Peregrine Falcon is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as endangered. Christmas Bird Counts completed at locations in the Project Area vicinity have identified Peregrine Falcons. Stony Creek has not observed Peregrine Falcon in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

Peregrine Falcons are found throughout the world. Historically, they have bred in New York, but as seen in Figure 17 they have not been known to breed in the Project Area. Peregrine Falcon populations declined in the 1960's due to use of pesticides, but have been rebounding in recent years. Because the Project Area is not part of the breeding range for Peregrine Falcon, potential impacts to the species, if they are present in the Project Area, are expected to be minimal. Stony Creek will monitor potential collision fatalities to Peregrine Falcon as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

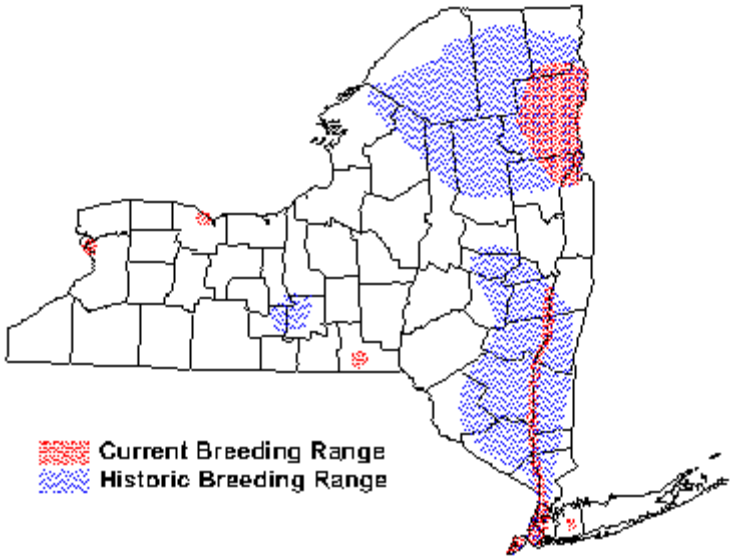

Figure 17. Peregrine Falcon Breeding Range in New York[97]

6.19.6 Northern Harrier (276, 291)

DEIS P 91, first paragraph under Operational Impacts on Protected Birds: Northern Harriers have been killed by turbines - a point that should be made here. (Submittal 291- ABR)

Extract from an email dated March 8, 2010 from "kimmarie," subject "Bird list for 2007-2008, 2008-2009, and 2009-2010", included in Submittal 276 – Lamanto:

> *Here is what I have in my records for the past 2 ½-3 years regarding Snyder Road (from RT 20A to Buffalo Road). …..[list of nesting birds]…. [list of "Visitors and fly-overs"]. The list of Visitors and Flyovers includes Northern Harrier "last seen in Summer 2006".*

Response: The Northern Harrier is not federally-listed as endangered or threatened, but it is protected under the federal Migratory Bird Treaty Act, and in New York it listed as a threatened species. The New York Natural Heritage Program indicates the species breeds in the state.

Stony Creek observed Northern Harrier in the Project Area in four of the five bird studies conducted between 2007 and 2010, including a survey conducted in Spring 2010 that was specially designed to detect Northern Harrier use and possible nests. As summarized in FEIS Section 4.6, Northern Harrier observations by Stony Creek were generally sightings of a single bird, but on two occasions a pair was observed in the same location. Sightings included both adult males and adult females, but no behavior indicated the presence of a nest.

Northern Harriers typically forage at heights below typical turbine rotor heights; however Northern Harriers perform courtship displays that could briefly place them at risk. Collision mortality of Northern Harriers has been documented at other wind farms in the United States. It is noteworthy that the pair observed at the Stony Creek site did not appear to be breeding.

[97] http://www.dec.ny.gov/animals/7294.html

As discussed in DEIS Section 3.4.3, effects of Project construction and operation to Northern Harrier and other similar species are not expected to be significant. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.7 Cooper's Hawk (276)

We have had a lot of sighting of the Cooper's Hawk in the north section of the Town of Orangeville. This person is a very well bird watcher and has been studying and watching birds for about 3 years. This hawk was seen in her backyard 9 different dates and at about the same times during the day. We know that the Cooper's Hawk habitat is where forest are interrupted by meadows and clearings. This area and most of Orangeville has this type of habitat that this hawk would and does use for hunting. The forest are perfect for the Cooper's Hawks nesting sites. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: Cooper's Hawk is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. The New York Natural Heritage Program indicates the species is "apparently secure in New York State."

Stony Creek observed Cooper's Hawk in the Project Area in three of its five bird surveys conducted between 2008 and 2010. Cooper Hawk observations by Stony Creek were: (i) four observations in spring 2010; (ii) one observation in Jan 2008; and (iii) one observation in Sep 2008. Cooper's Hawk was not observed in the 2007 breeding bird survey or in the spring 2008 raptor migration survey.

As discussed in DEIS Section 3.4.3, effects of Project construction and operation to Cooper's Hawk and other similar species are not expected to be significant. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.8 Sharp-Shinned Hawk (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Extract from an email dated March 8, 2010 from "kimmarie," subject "Bird list for 2007-2008, 2008-2009, and 2009-2010", included in Submittal 276 – Lamanto:

> *Here is what I have in my records for the past 2 ½-3 years regarding Snyder Road (from RT 20A to Buffalo Road). …..[list of nesting birds]…. [list of "Visitors and fly-overs"]. The list of Visitors and Flyovers includes Sharp-shinned Hawk.*

Response: Sharp-shinned Hawk is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern.

Stony Creek observed this species as part of its 2008 winter raptor surveys. As discussed in DEIS Section 3.4.3 impacts to raptors are expected to be minimal because these species have shown relatively high collision avoidance behavior. Stony Creek will monitor potential collision

fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.9 Horned Lark (276)

We have a lot of sighting of the Horned Larks in most of the township of Orangeville. The Horned Larks like the fields and open areas of Orangeville. With these birds having up to three (3) broods per year this area is very important for these birds to get their populations back up so maybe in time these birds will be off the special concern list. As you can see, these birds use this area for winter habitat.

One of the things that need to be pointed out is the turbine blades when they are closest to the ground are only about 20 feet. Most birds fly in that range. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: Horned Lark is not federally-listed as endangered or threatened, but in New York it is listed as a species of Special Concern. The New York Natural Heritage Program categorizes the species as "demonstrably secure in New York State." So secure in fact, that the federal agency empowered to oversee the Migratory Bird Treaty Act, the US Fish and Wildlife Service, submitted comments on the DEIS indicating a desire that more of the turbines be placed in areas outside of existing forests, in habitat presumably more suitable for horned larks.

Stony Creek conducted breeding bird surveys in accordance with NYSDEC protocols in 2008, 2009, and 2010, and no Horned Larks were observed as part of these surveys. Horned Larks were seen though as incidental sightings. In total, during three years of bird surveys at the project, only 18 Horned Larks were observed, suggesting that Horned Larks only infrequently occur in the Project Area. Incidental sightings of Horned Lark by Stony Creek were:

- 12 individuals, all in one field near Rt. 238, observed incidentally, during bald eagle surveys on Apr 29, 2010;
- 3 individuals at Buffalo Rd and Krotz Rd, observed incidentally, during winter raptor surveys on Mar 20, 2009;
- 1 individual east of Orangeville Center Road, observed incidentally on Mar 19, 2008 during spring raptor surveys; and
- 2 individuals seen chasing each other, observed as part of Spring 2008 raptor survey

Horned Larks were also documented in the Project Area by surveys completed as part of the New York Breeding Bird Atlas and the USGS Christmas Bird Counts.

The project area's habitats are largely altered by human activity, including farming, and the native grasslands preferred by horned larks are generally lacking. Due to lack of preferred habitat, and very low numbers of horned larks observed during pre-construction surveys, impacts to horned larks from the project will be minimal. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

In response to the commenter's statement regarding the minimum height to the turbine blades, at their lowest point, rotor blades (of the 100 m rotor diameter turbine) will be approximately 98 feet above the ground or more, depending on the final model of wind turbine used. This is much higher than the 20 feet stated by the commenter.

6.19.10 Henslow's Sparrow (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Henslow's Sparrow as a species that nests on the ground and that presumably was seen by a member of CSOO. The submittal does not contain a specific record of a Henslow Sparrow siting.

Response: Henslow's Sparrow is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as threatened.

Henslow's Sparrow has been sited in Letchworth State Park, and the New York Natural Heritage Program indicates the species could be present areas within 10 miles of the Project Area. However, Stony Creek did not observed Henslow's Sparrow in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

Because Henslow's Sparrow does not appear to be present in the Project Area in significant numbers, the Project should not have a significant impact on this species. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.11 Northern Goshawk (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Northern Goshawk as a species that nests on the ground and that presumably was seen by a member of CSOO. The submittal does not contain a specific record of a Northern Goshawk siting.

Response: Northern Goshawk is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. Northern Goshawk has been identified by volunteers in Christmas Bird Counts completed at locations around the Project Area, but not in the Project Area. Stony Creek did not observe Northern Goshawk in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

Because Northern Goshawk does not appear to be present in the Project Area in significant numbers, the Project should not have a significant impact on this species. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.12 Whip-poor-will (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species

mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Extract from an email dated March 8, 2010 from "kimmarie," subject "Bird list for 2007-2008, 2008-2009, and 2009-2010", included in Submittal 276 – Lamanto:

> *Here is what I have in my records for the past 2 ½-3 years regarding Snyder Road (from RT 20A to Buffalo Road). …..[list of nesting birds]…. [list of "Visitors and fly-overs"]…. [list of Species other Neighbors have reported seeing (but I cannot verify) . The list of species reportedly seen by neighbors includes Whip-poor-will.*

Response: Whip-poor-will is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. NYSDEC reports that the Whip-poor-will is rarely seen, but it is a locally common breeder in parts of New York that are not heavily forested, especially in Long Island and the St. Lawrence Valley. Further, NYSDEC writes that Whip-poor-will is absent in the higher elevation areas of the Adirondacks, Catskills, and Tug Hill Plateau. Stony Creek did not observe Whip-poor-will in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

Because Whip-poor-will does not appear to be present in the Project Area in significant numbers, the Project should not have a significant impact on this species. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.13 American Bittern (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

One of the datasheets provided was by Jim and Sheri Raab. It reported a siting of an American Bittern on April 26, 2009 at 6-7pm in the evening, located by a small swamp.

Response: American Bittern is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. Stony Creek did not observe American Bittern in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

Because American Bittern does not appear to be present in the Project Area in significant numbers, the Project should not have a significant impact on this species. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in in FEIS Appendix A.3.c.

6.19.14 Red-headed Woodpecker (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this

submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Red-headed Woodpecker as a species that was reportedly seen sometime in the past two to three years. The submittal does not contain a specific record of a Red-headed Woodpecker siting.

Response: Red-headed Woodpecker is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. Red-headed Woodpecker has been identified by volunteers in Christmas Bird Counts done at Letchworth State Park, but not in the Project Area. The NYS NYSDEC reports that Red-headed Woodpecker is locally a common breeder in lowland areas of the state. Stony Creek did not observe any Red-headed Woodpeckers in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

Because Red-headed Woodpecker does not appear to be present in the Project Area in significant numbers, the Project should not have a significant impact on this species. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.15 Upland Sandpiper (276)

We received a paper from the NYSDEC Natural Heritage Program stating that they have documents that the upland sandpiper is present in the town of Orangeville. They don't say where because of people possibly harming or disturbing this threatened species. On our map we have circled the whole Town of Orangeville and we truly feel that a study should be done to locate these birds before any start of this project. The NYSDEC has cut two wind turbines from the Gallo Island Wind Farm because o the Upland Sandpiper. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: Upland Sandpiper is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as Threatened. The commenter correctly indicates the New York Natural Heritage Program possesses data indicating an observation of an upland sandpiper at or near the Project Area in the Orangeville area. However, the fact that the species was not observed in any of the five project-specific surveys indicates this species is not common in the areas where the Project facilities are proposed.

Stony Creek has not observed upland sandpiper in the Project Area in any of its five bird surveys conducted between 2008 and 2010. In addition, local USGS Breeding Bird Surveys conducted in the vicinity of the Project Area have not observed upland sandpipers.[98]

As discussed in DEIS Section 3.4.3, effects of Project construction and operation to species similar to Upland Sandpiper are not expected to be significant. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

[98] See DEIS Appendix C.3

6.19.16 Grasshopper Sparrow (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Grasshopper Sparrow as a species that was seen in the Project Area as part of a "site visit." But the submittal does not contain a specific record of a siting of this species.

Response: Grasshopper Sparrow is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. Stony Creek observed this species as part of its 2010 bird surveys. As discussed in DEIS Section 3.4.3 impacts to Grasshopper Sparrow are expected to be minimal, in part because it is a grassland species that occupies areas closer to the ground and out of the wind turbine rotor zone.

6.19.17 Vesper Sparrow (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Vesper Sparrow as a species that was seen in the Project Area as part of a "site visit." But the submittal does not contain a specific record of a siting of this species.

Response: Vesper Sparrow is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. Stony Creek observed this species in the Project Area as part of its 2010 bird surveys. As discussed in DEIS Section 3.4.3 impacts to Vesper Sparrow are expected to be minimal, in part because it's a grassland species that occupies areas closer to the ground and out of the wind turbine rotor zone.

6.19.18 Red-shouldered Hawk (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Red-shouldered Hawk as a species that was seen in the Project Area as part of a "site visit." But the submittal does not contain a specific record of a Red-shouldered Hawk siting.

Response: Red-shouldered Hawk is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as species of Special Concern. As discussed in DEIS Section 3.4.3, Red-shouldered Hawk has been observed in Letchworth State Park and in Christmas Bird Counts completed in the Project Area vicinity. Stony Creek has not observed Red-shouldered hawk in the Project Area in any of its five bird surveys conducted between 2008 and 2010.

As discussed in DEIS Section 3.4.3, effects of Project construction and operation to Red-shouldered Hawk and other similar species are not expected to be significant. Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.19 Osprey (276)

[Submittal 276, from Lynn Lamanto of Clear Skies Over Orangeville is a large volume containing data sheets of birds, plants, and other wildlife observed by CSOO in the Project Area. The species mentioned in the submittal are listed in FEIS Appendix A.4.i, and extracts of the comments in this submittal are provided below. For maps and original lists, see copy of submittal in FEIS Appendix E.]

Submittal 276 includes a summary sheet that includes Osprey as a species that has been seen in the Town of Orangeville. But the submittal does not contain a specific record of a siting.

Response: Osprey is not federally-listed as endangered or threatened, but it is protected under the federal MBTA and in New York it is listed as a species of Special Concern. Stony Creek observed one Osprey near the Attica Reservoir on April 28, 2010 at 6:40 am. The diet of ospreys consists nearly entirely of fish, and feeding, breeding, and nesting could be expected to occur at Attica Reservoir, approximately 0.5 mile from the nearest turbine. Thus even if the birds consistently return to the area, chances of adverse effects, based upon data from the vast majority of other wind farms and given the location of the reservoir, is low.

Stony Creek will monitor potential collision fatalities by all birds as part of the Post Construction Monitoring Plan provided in FEIS Appendix A.3.c.

6.19.20 Indiana Bats (291, 278)

DEIS P 95, under Indiana Bat: The Indiana bat is not a subset of 'the Myotis species'. Myotis is a genera and the Indiana bat is a species. Should also include the scientific name (Myotis sodalis). (Submittal 291-ABR)

DEIS P 95, State Threatened, Endangered or Protected Bats, Indiana Bat: do you mean "genus", Not species - should correct throughout this section. (Submittal 291-ABR)

DEIS P 95, State Threatened, Endangered or Protected Bats, Indiana Bat: what is subset???, think you mean "species" (Submittal 291-ABR)

Threatened, endangered or protected bats are discussed on DEIS Page 95. The federally and state listed endangered Indiana bat (Myotis sodalist) does not belong to the Myotis species. It belongs to the Myotis genera and is a distinct species from all other Myotids in New York State. The closest known Indiana bat hibernaculum is not within 40 miles as stated in the document,

but is greater than 100 miles from the project area. The New York Natural Heritage Program letter referenced addresses the closest known Myotis leibii hibernaculum.

The Indiana bat is not known or anticipated to occur in Wyoming County based on our current understanding of Indiana bat movements within New York. However, the discussion of forest fragmention and suitability should be removed as Indiana bats are found in fragmented forests in New York. In addition, we consider the potential for roosting, foraging and documenting habitat when reviewing projects and the discussion appears to be focused on optimal maternity colony roosting habitat. Again we recommend removing much of this paragraph. (Submittal 278 – US Dept of the Interior)

The discussion of operational impacts to bats begins on Page 96. The second sentence reads, "there could be some summer roosting habitat and limited maternity roost habitat for Indiana bat, but overall the project area does not contain preferred habitat for this species".

We recommend striking the sentence for several reasons. There is currently no information to suggest that Indiana bats are likely to be within the project area based on documented movements of Indiana bats in New York State. Mist-netting or more detailed acoustic analyses than conducted (to species level) would provide further information on whether Indiana bats may be present. There is nothing to substantiate the claim that the project area does not contain preferred habitat for this species. (Submittal 278 – US Dept of the Interior)

Response: The Lead Agency concurs with the commenter, in that the Indiana bat (*Myotis sodalis*) is a species within the genus *Myotis,* and is not expected to occur in the Project Area. The Lead Agency further concurs with the comments pertaining to forest fragmentation and Indiana bat habitat, and the presence of Indiana bat habitat in the Project Area.

As recommended by the commenter, the following sentence is retracted from the DEIS and is not part of this FEIS:

> There could be some summer roosting habitat and limited maternity roost habitat for Indiana bat, but overall the project area does not contain preferred habitat for this species.

As recommended by the commenter, the paragraph on Indiana Bats on DEIS page 95 is hereby retracted and replaced with the following:

> The Indiana bat, *Myotis sodalist,* is present in New York but the closest known hibernacula over 100 miles from the Project Area. The Indiana bat is not known or anticipated to occur in Wyoming County based on the US FWS's current understanding of Indiana bat movements within New York.

6.19.21 Map of Counties with Indiana Bat Hibernacula (291)

DEIS Appendix C8, Natural Communities Mapping, Section3.0 heading, Page 3: It would be nice to have a county map of NY with IN bat hibernacula highlighted to show their proximity to the study area. (Submittal 291-ABR)

Response: Figure 18 is an excerpt from the Indiana Bat Recovery Plan that shows counties in which hibernacula exist. Counties shown in orange contain a Priority 2 Hibernacula (current or

observed historic population of 1,000 or greater Indiana bats, but fewer than 10,000; and an appropriate microclimate).

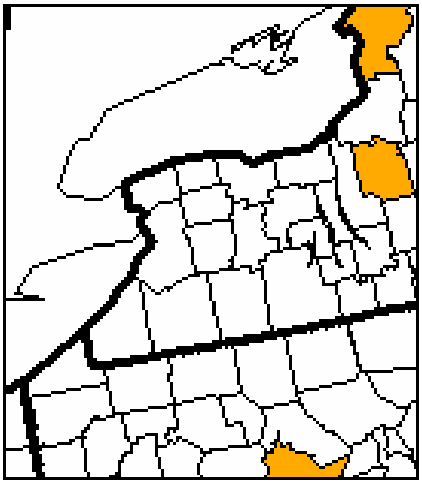

Figure 18. Western New York Counties with Indiana Bat Hibernacula

6.19.22 Bat Roost Habitat (291)

DEIS Appendix C8, Natural Communities Mapping, Project Statistics Map, page 14: Because bats tend to select tall and large diameter trees or snags within older-aged stands, and with the abundance of younger aged or disturbed forest stands mentioned in the text, it is hard to believe that all the area shown in green is potential bat roosting habitat. Please clarify. (Submittal 291-ABR)

Response: Male Indiana bats have been documented using roost trees of very small diameter (e.g., 2 inches dbh). The comment correctly notes that much of the area shown in green on the map in DEIS Appendix C8 is low/marginal quality habitat for maternity roost sites.

6.19.23 Indiana Bat Roosts (291)

DEIS Appendix C8, Natural Communities Mapping, Section 7.0, first paragraph, page 16: Although it's not mentioned in the Wildlife Study Plan, it would be important to know if there is potential roosting habitat surrounding the study area. The project study area does have suitable foraging habitat for bats (including IN bats) and it is common for bats to commute long distances between roost trees and foraging habitat. (Submittal 291-ABR

Response: Western New York is outside of the known range of Indiana bats[99] [100], so the likelihood of roosting Indiana bats in the Project Area, or immediate surrounding area, is very low, and is not expected by the US Fish and Wildlife Service.

[99] England, A., B. French, K, Gaukler, C. Geiselman, B. Keeley, J. Kennedy, M. Kiser, S. Kiser, R. Kowalski, D. Taylor, and S. Walker. 2001. Bats in eastern woodlands. Bat Conservation International, Austin, TX.

[100] Tim Sullivan, USFWS, personal communication, June 29, 2010

6.19.24 Clarification: Summer Indiana Bat Roosting Habitat (291)

DEIS P 95, under Indiana Bat, 4th Sentence, between the words potential and roosting: include the word 'summer' (Submittal 291-ABR)

Response: The Lead Agency concurs with the commenter; the sentence refers to the presence of summer roost habitat.

6.19.25 Wood Turtle (276)

We know the Town of Orangeville has wood turtles. These turtles are on the special concern list. We also know that these turtles use the same trails year after year for egg laying and travel routes for feeding, etc. These travel routes should not be disturbed. A study of at least one to three years should be done before any digging or site clearing or roads are to be put in. The NYSDEC did this in the Town of Middlebury, put tracking units on these turtles and tracked them for about 2 years. We need to save these wonderful animals and it starts with the NYSDEC saying to slow down this project until we can find out more about the locations egg laying sites and the travel routes. Please see map of one of the locations of wood turtles. (Submittal 276 - CSOO - Lomanto, Lynn)

Response: No species-specific surveys in the Project Area were completed by Stony Creek, nor requested by the NYSDEC. The wood turtle is not a species which warrants protection under the federal Endangered Species Act, and the species is similarly not identified as an endangered or threatened species by the State of New York, but instead is a species of Special Concern. The NYSDEC notes "species of special concern warrant attention and consideration but current information, collected by the department, does not justify listing these species as either endangered or threatened."

This species occurs in the upper Midwest and northeast US, as well as southeastern Canada, with the most secure populations occur in Maine and Maryland. In New York, the species occurs throughout the state as shown in Figure 19.

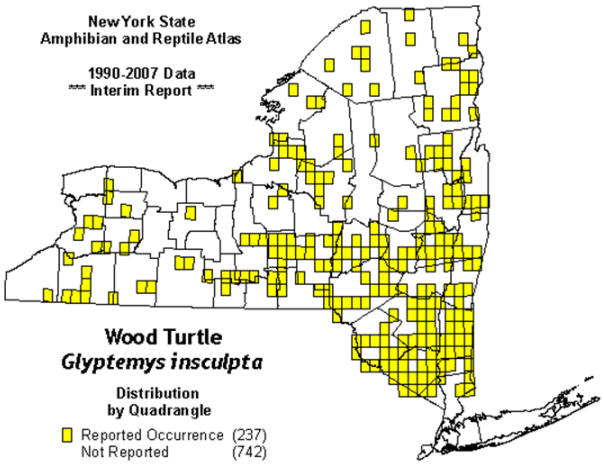

Figure 19. Wood Turtle Distribution in New York101

The New York Natural Heritage Program identifies the wood turtle as having an S3 rank: vulnerable to disappearing from New York due to rarity or other factors (but currently not imperiled); typically 21 to 80 populations or locations in New York, few individuals, restricted range, few remaining acres (or miles of stream), and/or recent and widespread declines. The S3 Status applies to neighboring states as well. The primary threats to the species appear to be related to (i) over-collection for an international pet trade, and (ii) habitat degradation. Numerous authors note that wood turtles are moderately tolerant of habitat alterations especially where stream, and stream-side habitat is largely protected. For example, the species persists in areas with substantial agricultural activities.[102] [103]

Wood turtles inhabit areas along permanent streams during much of each year. The Stony Creek Project has been designed to largely avoid these areas. In summer months the turtles may be found in nearby terrestrial areas, including deciduous woods, agricultural fields, forested wetlands, and wet pastures. Harding and Bloomer (1979)[104] and Arvisais et al. (2002)[105] report that nearly all known wood turtle observations are within 150-300 m of streams used by the turtles.

The comment references a map that shows a location where a wood turtle was sighted, however the map does not indicate the specific location of the sighting. Regardless, it would not be surprising to find a wood turtle in the Project Area since. As shown in Figure 19, the wood turtle exists throughout New York, including in Wyoming County.

To characterize effects of the Stony Creek project on potential wood turtle habitat, Stony Creek estimated the potential wood turtle habitat in the Project Area and how much of that habitat might be affected, temporarily or permanently by the Project. Potential wood turtle habitat is estimated as all area within 300 meters (984 feet) of a DEC-mapped stream. In the Project Area, there are 35.4 miles of DEC-mapped streams, resulting in approximately 8,400 acres of wood turtle habitat.

As discussed in FEIS Section 4.16, the Project is expected to have two turbines near streams, 24 ECS crossings of streams, and six road crossings of streams. Stony Creek estimates that the temporary and permanent impacts of these activities to areas within 300 meters of NYSDEC mapped streams will be 32.4 acres and 4.5 acres respectively. Thus, the Project is estimated to permanently impact 0.05% of the potential wood turtle habitat in the Project Area.

Considering the nature and magnitude of potential impacts, the limited overlap between potential wood turtle habitat and Project facilities, and the lack of a substantial documented local population, no significant impacts are anticipated.

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[101] http://www.dec.ny.gov/animals/44399.html

[102] Arvisais, M., J. Bourgeois, E. Lévesque, C. Daigle, D. Masse, and J. Jutras. 2002, Home Range and Movements of a Wood Turtle (Clemmys insculpta) Population at the Northern Limit of its Range," Canadian Journal of Zoology 80: 402–408.

[103] Massachusetts Natural Heritage and Endangered Species Program (MNH&ESP), 2007, "Forestry Conservation Management Practices for the Wood Turtle," Version 2007.1, Natural Heritage and Endangered Species Program, Massachusetts Division of Fisheries and Wildlife, Westborough, Massachusetts, USA.

[104] Harding, J. and T. Bloomer. 1979. The Wood Turtle, *Clemmys insculpta* a Natural History. Herp Bulletin of the New York Herpetological Society 15(1): 9-26.

[105] Arvisais, et al, 2002.

6.19.26 Jefferson Salamander (276, 278, 382)

Section 3.5.2 discusses animals (other than birds and bats) that may be found in the project area including Jefferson salamander, a state species of concern. Mapping from the New York State Department of Environmental Conservation (NYSDEC) indicates that this species' habitat may be found near at least three turbines. We recommend surveys be conducted to identify all habitat as well as individual use in the project area. (Submittal 278 – US Dept of the Interior)

We have made a list of salamanders found in the Town of Orangeville. Because of the large number of different species of salamanders we truly feel that these areas should be protected and that a detailed survey of the habitat should be conducted before any construction or work is permitted. We know for a fact that the new roads that will be put into service the wind turbines will disturb the habitat for smaller salamanders. Some of them are common but you have some that are on the special concern list for New York State. When you create large roads, the salamanders will die trying to go from its breeding grounds or back again. The Jefferson Salamander eggs are hatched and developed in vernal pools or wetlands. These are seasonal pools that fill up in the spring. We can foresee the topography changing with the addition of wind turbines and roads and therefore fear these species will be fooled into hatching eggs in small basins that dry up quickly, faster than the vernal pools. It isn't going to take much to impact this population of salamanders. We can't afford to lose any more of the salamander population. We are very firm on this matter. (Attachment: articles Natural Areas Journal, Conservation Biology, NYSDEC letter, 4 pp.) (Submittal 276 - CSOO - Lomanto, Lynn)

We have found Jefferson and blue spotted salamanders throughout the Town of Orangeville. Most the streams, gulfs and creeks have these salamanders in them. We know that cutting through the forest and making roadway are going to make this special concern species maybe go the endangered list. We need to protect what is here and not keep destroying everything that is living in our special town. The habitat is perfect for these wonderful little creatures. These areas have to be protected so this species will always be part of Orangeville's wonderful habitat. (Submittal 276 - CSOO - Lomanto, Lynn)

Salamander Habitat - The southern portions of the project site are within an area of known occurrence of Jefferson salamanders (Ambystoma jeffersonianum), a species of "Special Concern" in New York. The northern portion of the project site may also contain populations of this species. Studies by the Department of Environmental Conservation from 1998 – 2004 indicated the presence of a significant meta population of this species and associated hybrid forms in the Towns of Arcade, Eagle, Pike, Orangeville and Wethersfield. This species is rarely found in the remainder of the Region, although the blue-spotted salamander and its hybrid forms are known from several areas of the Lake Plains and valleys within the Appalachian Plateau.

The protection of this species and its habitats was addressed during the construction of the Noble Wethersfield Wind Farm Project immediately south of the Stony Creek Project Site. On the ground surveys revealed that Jefferson Salamanders and seasonal wetlands used by them for breeding were located in the vicinity of the 230KV connection line, constructed for that project just north of Quakertown Road. One of the seasonal wetlands contained the largest

concentration of Jefferson Salamander egg masses observed by NYSDEC staff in the Region. These identified breeding sites and at least two other suspected breeding sites are in the vicinity of Stony Creek Wind Farm towers T-57, T-58, and T-59. Region 9 Wildlife Staff have not completed extensive surveys for this species in the project area. However, sighting records exist from Quakertown Road and Wilder Road in the Town of Orangeville and Poplar Tree Road immediately below the Town of Orangeville line.

This species may occur in other woodlands within the Stony Creek Project Site. The NYSDEC recommended that the areas in the vicinity of following turbine towers (and associated roads and connecting lines) be searched for wetlands and vernal pool sites which may provide suitable habitat for the Jefferson salamander.

T-01, T-02, T-04, T-09, T-23, T-32, T-36, T-37, T-38, T-40, T-51, T-53, T-54, T-56, T-57, T-58 and T-59

Compliant with the DEC's request, these locations were surveyed by Stony Creek Wind LLC's consultant in April to determine if wetlands or vernal pool breeding sites exist there which may be impacted by construction of the project. The NYSDEC has not received the report of work and looks forward to reviewing the data. If such breeding sites are found, they should be avoided and not filled. And wherever possible, clearing of vegetation should not occur within 100 feet of the wetland or pool edge to provide an adequate wooded envelope around the pool for use by this species. If any additional work is necessary, surveys of potential breeding sites for this species can be reasonably performed during the months of July and August when the developing larvae can be observed. (Submittal 382– NYSDEC)

Response: Since the issuance of the DEIS, Stony Creek, in consultation with the NYSDEC , completed a survey of potential Jefferson Salamander habitat in the Project Area. This survey and its results are discussed in FEIS Section 4.1.

As discussed in FEIS Section 4.1, several breeding pools for Jefferson salamander have been mapped, and Stony Creek has modified the locations of turbines, roads, and cables to avoid impacts to the locations the large number of salamander egg masses, i.e., those where 50 or more egg masses were found. Additionally, changes made by Stony Creek to relocate turbines, roads, and cables to minimize impacts to forest areas and to wetlands will minimize impacts to other areas that may become Jefferson Salamander breeding areas in the future.

6.19.27 Mitigation for Federal T&E Species (278)

Impacts to threatened or endangered species and mitigation measures are discussed on DEIS Page 100. If no impacts are anticipated to threatened or endangered species, no mitigation should be included unless it is part of an adaptive management program that includes future monitoring of changes in species occurrences within the project area. (Submittal 278 – US Dept of the Interior)

Response: The Lead Agency concurs in that the taking of federally listed species is not anticipated. The updated Post-Construction Monitoring Plan in FEIS Appendix A.3.c is consistent with the comment in that it specifies adaptive management should there be changes in species occurrence in the Project Area.

6.19.28 Federal Take Permit (132)

Does Invenergy have a permit to kill any endangered and/or threatened species of bats and birds that has been issued by the United States Fish and Wildlife Service? (Submittal 132 – Jensen, Paul)

Response: Based on U.S. Fish and Wildlife Service consultation and results of pre-construction wildlife studies, no take of any T&E birds or bats is anticipated. However, as discussed in Section 6.17.2, if the NYSDEC determines that the Project will likely result in a Take, then Stony Creek will work with the NYSDEC to apply for and obtain a New York Incidental Take Permit.

6.20 Noise

6.20.1 Locations for Ambient Measurements (382)

The NYS DEC policy document, "Assessing and Mitigating Noise Impacts" places stress on reducing impacts above ambient/background levels. As determining the impact of the proposed wind farm on the local community depends on accurately determining existing background levels, an analysis should carefully justify the number of chosen background sampling points, their specific location, and any factors which may have an influence on the respective result. (Submittal 382 – NYSDEC)

As the project area spans over 14,500 acres, the background analysis should include a justification for the number of sampling locations chosen based on statistical analysis of what would be representative of such a large area. Ten (10) short term measurements were taken to assess variation, with only four (4) locations chosen for long term analysis, but there is no discussion as to why the reader should believe that these four locations were sufficient for analyzing ambient/background levels for a 14,500 acre area. The justification should preferably be based on a statistical analysis which would consider the variation in ambient/background levels, an acceptable confidence in result (plus or minus a certain dBA), and the consequent number of sampling locations thus required.

Furthermore, there is no rationale provided for why the given sampling sites chosen were selected - other than the professional judgment of the analyst. If the intention was to sample ambient/background locations near housing clusters, which would appear to be the most relevant locations, than sites near such housing clusters would be more representative of really existing ambient/background levels.

For a project spanning such a large area, the analysis may wish to answer the following question – do we have enough data to characterize the background among the various significant and proximal clusters of homes? It may be advised to analyze identifiable clusters of homes which could be affected and present the respective existing background levels along with potential impacts, above background, from the wind project.

Topographical differences as well as variation in background levels make such an analysis important. For example, the four ambient levels analyzed long term varied by a multiple of four in their respective decibel levels. (Submittal 382 – NYSDEC)

Response: The DEIS Noise Study, and the subsequent analyses performed for the FEIS, compared expected Project noise levels to the limits set out by the local law of the Town of Orangeville. The DEIS Noise study also included ambient noise measurements to help characterize the ambient acoustical environment, but these values are not employed to assess the Project's compliance with the local law.

Regardless, Stony Creek exercised reasonable professional judgement in the collection of data to assess the ambient acoustic environment in the Project Area. The DEIS Noise Study[106] (page 3) describes the selection of locations to measure ambient sounds in the Project Area. The

[106] Acentech Report No. 409, "Acoustical Study of Proposed Stony Creek Wind Farm, Orangeville, NY", James D. Barnes, February 2010, provided as Appendix D to the DEIS for the Stony Creek Wind Farm.

decision to monitor at four sites and the selection of these four sites was made by a community noise expert with experience in assessing ambient noise environments. There is no algorithm or statistical analysis that establishes the number or location of sites since every project is different. The number of sites selected reflects the generally homogenous nature of the landscape in the area, as well the lack of any central hamlets or areas of density.[107] The community noise expert toured the entire Project Area, conducting sample measurements with a handheld noise meter and observing typical noise sources in the area. He selected sites to be representative of the range of typical receptors where noise from the Project would be heard most often.

The comments in the submittal imply that the goal of an ambient noise monitoring assessment is to capture 100% of all sounds in an area or a quantified percentage. Such assessments, however, cannot be conducted with a cookbook formula to capture all sounds. Instead judgment must be exercised to ensure statistics reflect the actual environment. The sound environment is a function of the land uses and activity patterns in the Project Area. Outdoor sources in relatively rural areas typically include roadways, aircraft, farm and garden equipment, construction, flowing rivers and streams, wind in trees and brush, animals, birds, and insects. Noise-sensitive land uses are typically residences, but can also include schools, hospitals, libraries, and houses of worship. Ground topography, ground cover, and local meteorological conditions influence the propagation of sound from the sources to these noise-sensitive receptors. The field program considers all of these factors and aims to identify homogeneous acoustic regions where the long-term temporal statistics are relatively independent of measurement location and representative sound monitoring locations. The design of this field program is consistent with widely-accepted industry study methods.

In touring the Project Area, the Acentech expert found there was relatively little variation in the rural Project Area, and that most receptors would be rural residences. The major differences in noise levels at the receptors are:

- Road Noise. Many of the houses are located close to state Routes 20A and 238 which experience moderate traffic but at high speeds. Others are located near lower traffic roads where traffic sounds will be less frequent and of lower volume. Some houses are located relatively far from roads so that road noise will not be a factor in their ambient environments, but this is a minority of the houses in the Project Area.
- Vegetation Shielding. Vegetation can shield a house from wind noise, which is one of the larger contributors to the ambient noise environment in the Project Area. About half the houses are surrounded by vegetation or woods, about one half or more or less in open areas with a few nearby trees at hedgerows or around the house. Both types of locations, however, will usually experience high levels of wind noise when area wind speeds are high.
- Farm Noise. Dairy farming is significant business in the Project Area, and as such, many houses are located either near dairy barns where fans or compressors operate or near fields where farm equipment may be operating.

The Acentech expert selected monitoring locations that sampled the conditions listed above. For example, the four selected monitoring locations represent a range of different road

[107] Note that in the FEIS noise study for the 89-turbine Hounsfield Wind Farm Study used five receptors and provided no explanation of how the number of receptors was selected. http://www.dec.ny.gov/permits/54687.html.

conditions. One was on Route 20A, the most heavily travelled road in the Project Area, presumably one of the locations with the loudest ambient road noise levels. Other locations were selected to be on lower volume rural roads, presumably with the lowest ambient road noise. Sites were also selected to represent both shielded and unshielded sites. Any loose groups of houses in wooded areas may be more shielded from wind noise, but they will have local sound sources related to people activities (e.g., local traffic, air conditioners, TV, radio, etc.) that are typically present in all residential areas at some times.

6.20.2 Ambient Noise Sources, Representation of Sheltered Locations (382)

The DEC recommends a more detailed discussion of any factors that may cause a given location to be influenced towards a less conservative ambient/background level. Such factors could include work or hobbies conducted nearby (such as tractor or ATV use), traffic on nearby roads, higher wind levels (due to elevation and exposure), and quite a few other possibilities including brook noise or barking dogs kept nearby. Background levels are, of course, influenced by such factors as road noise and wind, but it is important that the applicant explain the choice of locations with care to show that the results could not be unduly biased towards higher readings by non-representative events. And, in fact, the ambient levels identified did appear to be above average for a rural area. Further, it should be kept in mind that some (possibly many) residences may be in relatively wind sheltered locations while still being within a reasonable distance of the turbines. If this is the case, and background survey locations do not reflect this, the difference between background and wind turbine generator sound levels may be greater than anticipated. A rationale for placing the sampling locations between the home and major local sound source would be helpful.

Given that the majority of the background sampling points were in close proximity to roads, more so then nearby homes, some discussion of this influence, as well as other activities in the nearby area, should be discussed. For example, do nearby residents use tractors or ATVs? How heavy is the car and truck traffic on the nearby road?

While pictures were provided from one perspective, it would be much preferable to have photos cover a 360 degree view, or at least multiple vantage points. This provides the reader a better grasp on potential confounding factors. For example, the photo at location three reveals a large dog near the sampling location and the photo for location two reveals a large barn (which may or may not hold powerful ventilation fans or motorized farm equipment). What is apparent is that the four locations chosen appear to be either near relatively busy roads or at high windy elevations. (Submittal 382 – NYSDEC)

Response: The DEIS Noise Study, and the subsequent analyses performed for the FEIS, compared expected Project noise levels to the limits set out by the local law of the Town of Orangeville. The DEIS Noise study also included ambient noise measurements to help characterize the ambient acoustical environment, but these values are not employed to assess the Project's compliance with the local law.

Regardless, Stony Creek exercised reasonable professional judgement in the collection of data to assess the ambient acoustic environment in the Project Area. FEIS Appendix A.7.b has figures showing the exact locations where ambient noise monitoring was conducted.

Table 47 lists characteristics of the four locations where ambient noise measurements were collected by Acentech, including representative ambient sound sources at each location. The

field team observed sources that are typical for rural areas with calm to windy conditions that contain residences, light to moderately-travelled roads, and operating farms.

Table 47. Ambient Noise Measurement Locations: Site Characteristics and Results

	Location 1 Schabloski Residence	Location 2 Tozier Residence	Location 3 Magee Residence	Location 4 Straub Residence
House ID	H-0332	H-0152	H-0209	H-0255
Nearest Road	Almeter Road	Orangeville Center Road	NYS Rt. 20A	Krotz Road
Wind Noise Concerns				
Site Elevation	Similar to surrounding land	Similar to surrounding land	Similar to surrounding land	Similar to surrounding land
Exposure to wind	Open area near home	Protected by trees near home	Open area in side yard	Open area in side yard near home
Wind Screen Used	Yes	Yes	Yes	Yes
Trend with Wind Speed	No	Slight	No	Slight
Local Environment				
Microphone Location	Side Yard (West side of house)	Side Yard (North side of house)	Side yard (East side of House)	Side yard (North side of house)
Surface Around Microphone	Lawn	Lawn & woods	Lawn	Lawn
Microphone Mounting	~5 ft above ground	~5 ft above ground	~5 ft above ground	~5 ft above ground
Road Noise Concerns				
Setback from local road	Similar distances to road and barn as home	Similar distance as home	Similar distance as home	Similar distance as home
Possible Sources of Ambient Sound	Local & distant traffic, birds, aircraft, barn fan & other farm equipment, wind in trees & brush, lawnmower, dogs, insects	Local & distant traffic, birds, aircraft, farm equipment, wind in trees & brush, lawnmower, dogs, insects	Local & distant traffic, birds, aircraft, farm equipment, wind in trees & brush, lawnmower, dogs, insects	Local & distant traffic, birds, aircraft, other farm equipment, wind in trees & brush, lawnmower, dogs, insects
Two Week Noise Statistics (dBA)				
Leq (energy average)	55	48	58	51
Lmax (maximum)	94	89	92	94
L10 (arithmetic average)	49	45	58	41
L90 (arithmetic average)	46	35	36	31
L90, nighttime (arithmetic average)	44	34	31	28

Note: Time series plots of the noise results are shown in DEIS Noise Study Figures 7 through 14.

Representation of Wind Sheltered Locations

The comment states that typical residences could be in wind sheltered locations, but asks whether the monitoring locations are representative of these sheltered locations. The long-term monitoring locations were selected to be representative of the residences in the area, and thus part of the selection of monitoring locations involved a field evaluation of residences by a noise expert to assess whether houses tended to be sheltered from wind noise, unsheltered, or some combination of both. In general, the houses closest to proposed wind turbine locations are not sheltered from the wind, but there are many houses that are sheltered by trees or shrubs near the house. The monitoring locations represented both sheltered and unsheltered locations.

All microphone locations were in the side yards of actual residences. Three locations where not sheltered from the wind, one location was sheltered. The sheltered location was Site 2, which was located in a tree and brush section of the yard that was relatively sheltered from the wind.

Road Noise

As expected, both local and distant road noise contributed in varying degrees to the sound levels observed in the community. To characterize the road noise at the residences, the field team typically located the microphone back from the local road the same distance as the home.

The comment contends that the selection all four locations were near busy roads or on high wind elevations. As shown in Table 47, this contention is not correct. The monitored locations were near actual residences, and only one of the residences could be classified as being on a busy road: Location 3 was near a residence on Route 20A. The other three residences were on roads that are not heavily travelled.

Comparison to NYSDEC Typical Ambient Level

The NYSDEC Program Policy on Assessing Noise Impacts (DEP-00-1) states that the ambient sound level for "a quiet seemingly serene setting such as rural farm land will be at the lower end of the scale at about 45 dBA." The results of the monitoring at Stony Creek indicated long-term average ambient sound levels greater than 45 dBA. This may be due to the long-term averages including the daytime periods when local and distant traffic sounds contribute more than in the typically quieter nighttime periods and are significantly greater than 45 dBA.

Ambient Noise Trend with Wind Speed

Figure 15 of the DEIS Noise Study shows that 10-minute ambient Leq noise levels vary significantly in the Project Area, ranging from 20 to 80 dBA. FEIS Appendix A.7.j shows this same ambient noise data broken out for each site and for nighttime only periods. As shown by the figures in the FEIS Appendix A.7.j:

- Site 1 at a residence on Almeter Road rarely had 10-minute average ambient noise levels below 43 dBA, likely due to the presence of a barn fan or similar equipment in the vicinity of the residence where measurements were taken. This relatively steady noise source controlled the ambient environment at this site and no trend was present between wind speed and the ambient noise level.
- Site 2 at a residence on Orangeville Center Road had 10-minute average ambient noise levels that varied from 20 dBA to 70 dBA during all hours and from 20 dBA to 60 dBA during nighttime hours. When ambient noise for all hours is plotted against wind speed, no trend is obvious, presumably because noise sources unrelated to wind (e.g., distant traffic, human activity) control the environment. But the plot of nighttime 10-minute average ambient noise levels at this site does show a trend of increasing ambient noise levels with increasing wind speed.
- Site 3 at a residence on Route 20A shows higher ambient noise levels than the other sites, presumably due to traffic noise on Route 20A. Evaluation of the nighttime ambient noise levels at this site show noise levels are higher than at the other sites and no trend with wind speed.
- Site 4 at a residence on Krotz Road shows a range of ambient noise levels similar to the other sites, but no obvious or strong influences from road noise or machinery. The nighttime noise levels at this site show a slight trend of increasing with greater wind speeds.

Review of the ambient noise data indicates that at locations where the ambient noise environment is not dominated by road noise or a constant noise source, there can be a slight trend toward increasing ambient noise levels with increasing winds. The trend varies from site to site, and it is not strong enough to rule out the possibility that at some sites there will be specific periods of time, such as in early morning hours (e.g., 2 am), where ambient noise levels could be relatively low (below 30 dBA) when wind speeds were in the range where wind turbines would be operating.

6.20.3 Calibration Data (382)

The survey equipment used for the analysis should be presented along with its calibration data. (Submittal 382 – NYSDEC)

Response: Table 1 in the DEIS Noise Study lists the manufacturer and model type for the main equipment used in the ambient noise survey. The DEIS Noise Study (page 3) also states that the sound level monitors were field calibrated just prior to and following the measurements, and that the sound level monitors were laboratory calibrated within 12 months prior to the measurements. Results of the laboratory calibrations are provided in FEIS Appendix A.7.a.

6.20.4 Windscreen Specifications (382)

Supplemental equipment such as wind screens should be described in greater detail. (Submittal 382 – NYSDEC)

Response: The DEIS Noise Study (page 3) states that a windscreen was fitted on each microphone. The windscreen used at Locations 2 and 3, locations that were relatively protected from the wind or adjacent to the well-traveled NYS Rt. 20A, was the Bruel and Kjaer Model UA0237. This windscreen model incorporates a 90-mm diameter open-cell polyurethane foam design. The windscreen employed at Locations 1 and 4, locations that were in somewhat more exposed areas and adjacent to less-traveled roads was the Rion Model WS-03. This unit incorporates a 20-cm diameter open-cell polyurethane foam design. Photographs of the two types of windscreens in use at the Stony Creek monitoring sites are shown in Figure 20 and Figure 21.

Figure 20. Bruel & Kjaer Windscreen in use at a Stony Creek Ambient Noise Monitoring Site

Figure 21. Rion Windscreen in use at a Stony Creek Ambient Noise Monitoring Site

6.20.5 L90 Sound Levels (382)

L90 is an important metric in understanding existing sound pressure levels in a community. Providing a similar table for L90 as provided for Leq on page 104 of the DEIS would be useful for understanding the potential impacts. Modeling of sound pressure level impacts of the wind turbines in terms of L90 would provide additional insight on potential impacts. (Submittal 382–NYSDEC)

Response: Measured ambient L90 statistics for 10-minute averaging periods are presented graphically in Figures 7, 8, 9, and 10 of the DEIS Noise Study, and summary L90 statistics for the full 2 week measurement period are presented in Table 47.

The modeling of the wind turbine sound emissions assumes that the wind turbines produce a constant sound level, and therefore, the wind turbine sound emissions can be considered to be wind turbine L90 sound levels.

6.20.6 DEC Guidelines Compliance (342)

Apart from the distinctive characteristics of wind turbine noise, including its low frequency component, state environmental guidelines indicate that the estimated sound levels at properties adjacent the Invenergy wind utility footprint is unacceptable. This is primarily a result of the very quiet rural residential settings that the utility is targeting for development. The New York State Department of Environmental Conservation (NYSDEC) has issued a guideline on how to assess noise impacts that is very useful because it was written for NYSDEC staff who lack a background in acoustics but are often called upon to evaluate noise assessments. The NYSDEC guidance states:

> *(1) "In non-industrial settings the SPL [sound pressure level} should probably not exceed ambient [pre-construction] noise by more than 6 dB(A) at the receptor." NYSDEC (2001, p.14).*
>
> *(2) "An increase of 10 dB(A) deserves consideration of avoidance and mitigation measures in most cases." Id.*

(3) Among the accepted mitigation measures is: "Increasing the setback distance." Id., p. 24.

(4) "SPL increases approaching 10 dB result in a perceived doubling of SPL." Id., p. 14.

(5) An SPL increase over 20 dB will be experienced as: "Very objectionable to intolerable." Id., p.15.

(6) "If the goal is not to raise the future noise levels the new facility would have to operate at 10 dB(A) or more lower than the ambient" Id.

(7) "L(90) is often used to designate the background noise level." [d., p. 12 See also James (2009, p. 2) (ANSI/ASA standards for measurernent of the long term background sound levels" call for the use of the L(90) measure).

It is important to recognize that an increase of 6 dBA above pre-construction sound levels (representing over 50% increase in loudness and 200% increase in acoustic energy) will still result in the Invenergy wind utility project's sounds to be heard. It may not be sufficiently protective to prevent turbine sound emissions from being a source of nighttime sleep disturbance. It should, however, address the issues of daytime annoyance. It is important to understand that the annoyance of what may be viewed by some as a relatively small change in the acoustic environment is due to the specific differences between wind turbine sounds and those of other common community noise sources that were noted earlier. The modulation of blade aerodynamic noise (blade swish) and non-auditory effects of low frequency noise, together with its constant presence during night times, when quiet is needed for healthful sleep are the distinguishing factors. It is not just the absolute sound pressure level. (Submittal 342 – E-Coustic Solutions)

(Note: This comment is part of a wide ranging discussion provided in Submittal 342. It has been separated into multiple comments in this FEIS so that each of the points can be addressed separately.)

Response: FEIS Sections 6.20.8 and 6.20.33 address potential distinctive characteristics and low frequency components of wind turbine noise.

FEIS Section 6.20.9 addresses nighttime noise and sleep disturbance.

Compliance with the NYSDEC Guidance is assessed using the ambient noise levels indicated by the Leq statistic, not the background levels indicated by the L90 statistic. FEIS Section 6.20.7 contains further discussion the appropriateness of using L90 or Leq when interpreting the NYSDEC Guidance.

The comment misunderstands the NYSDEC Guidance in concluding that "state environmental guidelines indicate [noise from the Project] is unacceptable." The NYSDEC Guidelines[108] are intended to be used as a guide for assessing noise impacts, and they do not explicitly address wind energy situations. Nonetheless, analyses in the DEIS Noise Study show that the proposed

[108] DEP-00-1, New York State Department of Environmental Conservation (NYSDEC) Program Policy, "Assessing and Mitigating Noise Impacts," Issued October 6, 2000 and revised February 2, 2001.

Project does comply with the general guidance in the NYSDEC Guidelines, and the DEIS and FEIS studies properly concluded that no significant adverse impacts are anticipated.

The commenter presumes the NYSDEC Guidelines are written for "DEC staff who lack a background in acoustics," but nowhere in the NYSDEC Guideline is this stated.

It's also important to recognize the NYSDEC Guidelines are guidelines only. The NYSDEC Guidelines make clear that they are not a set of fixed rules and that they do not supersede any local noise ordinances or regulations. Nonetheless, the NYSDEC Guidelines are a useful tool for assessing potential noise impacts.

Stony Creek agrees with the commenter's assessment that the project will be heard; this was stated clearly in the DEIS Noise Study (final sentence, page 14):

> "Community residents in the project area will at times hear sounds associated with operation of the facility, but the overall impact is not expected to be significant."

But the question is not whether or not the Project will be audible, but whether noise from the Project will be a significant nuisance. The NYSDEC Guidance suggests that noise will not be a nuisance if it does not exceed ambient sounds by 6 dB at community receptors. The DEIS Noise Study indicates that the Project will meet this requirement. The commenter reaches a flawed conclusion regarding compliance with NYSDEC Guidelines, mainly due to the three differences (or errors) in interpretation of the NYSDEC Guidelines:

- The DEIS Noise Study appropriately assumes community receptors are all residences. The commenter assumes all areas in the Project Area are receptors.
- The DEIS Noise Study appropriately uses ambient noise the baseline in applying the 6 dB criterion. "Ambient" is the term used by the NYSDEC Guidelines, not "background." The commenter interprets the NYSDEC Guidelines using background noise. As discussed in FEIS Section 6.20.7, ambient noise and background noise are very different.
- The DEIS Noise Study uses average ambient sound levels in applying the 6 dB criterion. The commenter attempts to apply the 6 dB criterion for every possible hour (or shorter), focusing on the lowest measured background sounds that could occur late at night, when most people are sleeping. The NYSDEC Guidelines do not provide clear guidance on the time frame to be used in applying the 6 dB rule, and this point is discussed further in FEIS Section 6.20.13.

The question of impacts to nighttime sleeping are more directly analyzed using the WHO Guidelines that are discussed in FEIS Section 6.20.9. It is noted that the commenter has not offered knowledge of sleeping impacts and has not presented any evidence supporting its conclusion.

6.20.7 Ambient vs. Background Noise (342)

Wind developers attempt to justify using background sound levels collected when ground level wind speeds exceed 5 miles per hour. They base this approach on the presumption that this wind 'noise' will mask the sounds of wind turbines. However, as Van den Berg's research into the effect of wind shear shows this is frequently not the case. This is also not supported by this author's studies or of other acoustical researchers like Mr. Schneider. If there are frequently times when turbines will be operating and the ground level winds calm such that there isn't any

leaf or vegetation rustle then it is those quiet times that establish the pre-operational background ambient sound levels.

In addition, developers include such things as local traffic, industrial sounds, farm machinery, barking dogs, lawnmowers, children playing and the interaction of the wind with ground cover, buildings, trees, power lines, etc. in their measurement of pre-construction baseline sound levels, (id., p. 20), but this approach departs from acoustics standards. Kamperman and James (2008), 4; James (2009b), p. 2:

> *current standards specify that "the proper metric for describing the preoperational sound levels is Long-Term Background sound level usually measured using a statistical process to identify the quietest one minute of a 10 minute sample taken during the time when the new noise source is most likely to generate complaints".*

Tests of background ambient sound levels were conducted in the Orangeville area on April 1, 2010 by the author of this paper. The chart below (next page) demonstrates the quiet nature of the properties in the Orangeville community.

It is important to separate out the non-essential data presented in the Acentech report that is contaminated by short term events and other sounds prohibited by ANSI standards from being included in long term background sound testing. Once the data discussed in the Acentech report is screened for those data points the background sound levels are below 30 dBA. Since, the potential for sleep disturbance and consequentially adverse health effects is primarily a nighttime concern the sounds from daytime traffic and community activities will not be present Further, ANSI standards specifically preclude including wind noise in these measurements. Given that preface, it is clear that the Invenergy studies confirm the presence of very low sound levels. They have just chosen to obscure them.

Low background ambient sound levels were also reported in the study by Mr. Clifford Schneider. Schneider reported that the median background sound level for approximately 20 test locations in northern New York was 25.5 to 26.7 dBA.

Background noise tests were conducted for five (5) properties in the Orangeville community by the author on April 1, 2010. These tests were conducted according to ANSI standards for outdoor measurements of quiet rural areas. The reported values represent the ambient (background) sound level after the effects, if any, of wind, insects, or other short term or seasonal sources of sound have been removed. The Table below shows the findings of this study and the maximum sound level that the wind turbine project should be permitted to exceed. In all cases the model of the project shows that the wind turbines will cause exceedances of the NYSDEC Guidance.

Residence	*Site Number*	*Time*	*Background Ambient (LA90) (w/o wind, birds or insects)*	*Background Ambient plus 6*
Orr, 2621 Krotz Rd.	*Site 1*	*2:10 PM*	*28.5*	*34.5*
Makson, 2419 Krotz Rd.	*Site 2*	*3:00 PM*	*28.4*	*34.4*

Karasiew, RT 20A	*Site 3*	*3:50 PM*	*33.0*	*39.0*
Wilkinson, 2975 Orangeville Center Rd.	*Site 4*	*4:30 PM*	*26.6*	*32.6*
Dickinson, 3252 Centerline Rd.	*Site 5*	*5:40 PM*	*28.3*	*34.3*
Orr, 2621 Krotz Rd.	*Site 1*	*Midnight*	*24.8*	*30.8*
Dickinson, 3252 Centerline Rd.	*Site 6*	*11:00 PM*	*29.8*	*35.8*

How is it that the Invenergy position, that background sound levels are over 40 dBA, be supported when their own data and the data collected by others, such as Mr. Schneider and the author of this paper, find background levels in the low to mid 20 dBA range? The study of background sound levels reported by Acentech for Invenergy concludes that background sound levels in Orangeville are 48 dBA to 58 dBA. What is not disclosed is that the methods used to collect this data do not meet American National Standards Institute (ANSI) standards and are based on a novel method of collecting pre-operation sound levels not used by many acoustical consultants in the US. This method is modeled on a British standard, ETSU-R-97, which was developed by the British Wind Energy Association (BWEA), the British government, and acoustical consultants who worked for the wind industry. This novel approach routinely shows quiet rural areas as having high background sound levels of 40 dBA and higher. The ETSU-R-97 standard is under serious challenge in the U.K because it has led to siting wind turbines in communities that later report numerous complaints of nighttime sleep disturbance and other negative impacts.

One of the major proponents of this novel method in the US is Hessler and Associates, Inc. who did a study on behalf of the utility developer at Cape Vincent NY using this novel procedure. Dr. Paul Schomer, current Chair of the Acoustical Society of America's Standards Committee, was contracted to conduct an independent review of this work and the procedure that was followed. His findings were presented in a report "Background Sound Measurements and Analysis in the Vicinity Of Cape Vincent, New York." His conclusions were summarized as follows:

> *Because there were concerns early on among local citizens that the BP report was misleading, the Wind Power Ethics Group (WPEG) contracted with Schomer and Associates, Champaign, Illinois to conduct an independent background sound survey of Cape Vincent. Hessler's BP study for the Cape Vincent Wind Power Facility appears to have selected the noisiest sites, the noisiest time of year, and the noisiest positions at each measurement site. Collectively, these choices resulted in a substantial overestimate of the a-weighted ambient sound level, 45-50 dB according to Hessler. (Emphasis added by author)*

We find the same type of study conducted for the community near the footprint of the Invenergy wind utility arriving at similar values. It is the opinion of this author that the reasons for the high background sound levels have much to do with this flawed methodology being used by Acentech for their studies of Orangeville.

As other standard setting agencies have indicated, setbacks of about one kilometer (3,280 feet) to as far as 1.25 miles would be necessary to avoid sound levels more than 6 dBA above background levels obtained using ANSI procedures for assessing long term background sound levels. See also Minnesota Department of Public Health (2009), p. 25 ("if a turbine is subject to aerodynamic modulation because of shear caused by terrain (mountains, trees, buildings) or different wind conditions through the rotor plane, turbine noise may be heard at greater distances" than one-half mile, or 2,640 feet). This is consistent with the Van den Berg study:

> *"in quiet nights the wind farm can be heard at distances of up to several kilometers when the turbines rotate at high speed. In these nights, certainly at distances from 500 to 1000 m [1,640 to 3,280 feet] from the wind farm, one can hear a low pitched thumping sound with a repetition rate of about once a second (coinciding with the frequency of blades passing a turbine mast), not unlike distant pile driving, superimposed on a constant broad band "noisy" sound. A resident living at 1 km from the nearest turbine says it is the rhythmic character of the sound that attracts attention: beats are clearly audible for some time, then fade away to come back again a little later. A resident living at 2.3 km from the wind farm describes the sound as "an endless train", In daytime these pulses are usually not audible and the sound from the wind farm is less intrusive or even inaudible (especially in strong winds because of the then high ambient sound level)." (Van den Berg 2006, p.42)*
>
> *At these distances, the mid-frequency range sounds diminish because they are more readily absorbed by the air, but the low frequency ranges do not. Wind turbines at such distances will generate "a louder and more low frequency' thumping' sound and less the swishing sound that is observed close to a daytime wind turbine." Jd., p. 65.*

Thus, the annoyance of wind turbine noise is the result of its rhythmic or modulating character, its low frequency component, and its presence during times of calm surface atmosphere, most commonly at night when sound travels farthest.

It is clear that the background sound level, which is selected as the baseline against which the wind utility project operational sounds should be assessed requires the transient sounds be excluded from the measurements used to calculate the LA90 background sound level. This is in contrast to the data favored by wind energy facility developers, which is sampled to include the effects of nearby in short-term sounds. The relevant consideration is the need to capture the quietest period of time. This will be the time complaints can be expected about intrusive noise sources that operate at night Using a different measure for background, ambient or preconstruction baseline sounds such as done by the wind industry will result in under prediction of complaints.

The background sound levels reported and used by Invenergy for its claims of minimal impact on properties adjacent to its wind utility are similar to those found in many other reports conducted on behalf of wind turbine utility developers. This approach has been used to gain acceptance with planning committees in town boards for locating wind turbines close to residential properties. It is however also responsible for the high-level complaints about noise levels in communities near many projects both in Europe and the US. However, new research, which reaffirms the traditional methods of assessing background sound levels as standardized in ANSI

standards confirm that these novel measurement methods seriously underestimate wind turbine noise. There can be no excuse for accepting these types of results as the basis for issuing permits. (Submittal 342 – E-Coustic Solutions)

(Note: This comment is part of a wide ranging discussion provided in Submittal 342. It has been separated into multiple comments in this FEIS so that each of the points can be addressed separately.)

Response: Overall, the comment questions why the DEIS analyses do not compare wind turbine sounds to existing sound levels at the quietest 10-minute periods of the year, when there is no sound from birds, wind, or insects. As discussed below and in FEIS Section 6.20.25, NYSDEC Guidance does not suggest that such an approach should be used. But regardless of the NYSDEC Guidance, comparing wind turbine noise to the sound levels at the quietest times of the year would inappropriately compare noise of turbines, which only operate when the wind is blowing, to an ambient acoustic environment that would occurr when winds are low or non-existant.

The approach advocated by the commenter is fundamentally different than is suggested by the NYSDEC Guidance or required by the Local Laws of the Town of Orangeville. The proposed approach has the goal of making the noise from the turbines blend-in with the quietest background sounds in the area, so that the turbines would rarely be heard. While this approach may be ideal, it is not practicable. (Note that if such an approach were used as the basis for allowing homes, roads, or farms, none of these could be built as they would likely increase noise levels above the quietest background noise levels). Instead, the requirements of the Town Law effectively allow noise levels that may be heard, but limit them to levels that will minimize the likelihood of the turbines being a annoyance to the majority of people.

The bulk of this comment concerns whether wind turbine sounds should be compared to "ambient" noise or to "background" noise. The commenter argues that noise impacts should be evaluated by comparisons to "background" noise, not to "ambient" noise. As discussed below, these are different metrics.

<u>Ambient Noise v. Background Noise</u>

Much of the commenter's criticisms and concerns appear to be based on a misunderstanding of the difference between the definitions of ambient noise and background noise as they are typically used when assessing community noise impacts from new potential noise sources. As used in this context:

- "Ambient noise" is the total noise environment prior to a new noise source being introduced. As such, it includes all types of sounds that may be present, including noise from wind, cars, wildlife, running water, people, dogs, machinery, etc. When assessing an overall noise environment, it can also include the noise environment at all times: daytime and nighttime, summer and winter, etc. This explanation is consistent with the definition provided in standard textbooks on acoustic measurements and noise control. One such text book defines ambient noise as "the all-encompassing noise associated with a given environment at a specified time, being usually a composite of sound from many sources in many directions, near and far, no particular sound dominant."[109]

[109] Handbook of Acoustical Measurements and Noise Control, Third Edition, 1991, Harris, Cyril M., editor.

- "Background noise" or more accurately "residual background noise" as the commenter implies, is the quietest noise level that exists when temporary or infrequent sounds are not included. Technically, background noise is characterized by the statistic L90 – this is the average noise level when the times with 90% of the loudest sounds are removed. In real world terms, the background noise is driven by the larger area and the noise sources in the region. If a region is relatively urban, there will be many sound sources in the general vicinity of a particular location (say within a ½ mile), and even if the local temporary noises are removed, there will still be many sounds within the vicinity and the "background" noise will remain relatively high. In a more rural area, the sounds in the vicinity may be wind, water, cars, or distant machinery. Overall there will likely be fewer sound sources in the vicinity of a rural location, and thus the background noise will be lower. But depending on the time over which a L90 measurement is made, a background L90 level made in a rural area can be expected to vary depending on whether several relatively constant sound sources are present: blowing wind, wildlife activity (e.g., spring peepers), or daytime traffic. This explanation of background noise is consistent with explanations offered in regulations and guidelines. For instance, one guideline states, "L90 is usually regarded as the residual level, or the background noise level without the source in question or discrete events."[110]

People often use the term "background noise" when discussing what would be more accurately described as "residual background noise." For instance, the sound levels described by Mr. James would be most clearly labeled "residual background noise."

Several statistics are used to characterize ambient noise. L90, Leq, L10, and Lmax are all statistics that community noise experts use to assess an ambient noise environment. Leq is often considered the best overall indicator because it captures all sounds in an environment, and because many guidelines measure annoyance values using Leq average noise levels. To characterize an ambient noise environment by background L90 levels only, is a misrepresentation of an ambient environment.

For a given environment, background L90 noise levels are, by definition, lower than Leq ambient noise levels.

Background Noise Levels in Orangeville

The commenter provides his own measurements of L90 noise levels at various points in Orangeville. Unfortunately, the commenter did not provide any documentation on how these measurements were made. For instance, there is no information on the make or model of equipment used; calibration data; type of windscreen; exact locations; durations of measurements; or means for filtering out wind, insect, and car noise (as the table heading indicated was done), or qualifications of the person taking the measurements. This is basic information (see the NYSDEC comments above), the absence of which renders the commenter's claims incapable of proper review.

Nonetheless, the L90 statistics reported by the commenter are not inconsistent with the L90 measurements in the DEIS Noise Study. Figures 7, 8, 9, and 10 in the DEIS Noise Study show that the 10-minute L90 levels varied over a two week time period within a range from 20 dBA to 50 dBA, depending on the time of day. The values of 28.5 dBA to 33.0 dBA reported by the

[110] New York City CEQR Technical Manual, Chapter 19 "Noise", Page 19-4.

commenter are in this range and are plausible readings of instantaneous background L90 levels in the Project Area.

The values sited from Mr. Clifford Schneider are taken from a completely different part of New York and thus are not directly applicable to the proposed Project. It's also noted that the Schneider data were collected at points away from homes, and thus may not reflect noise conditions at an actual noise receptor. However, the values of 25.5 to 26.7 dBA that the commenter sites from the Schneider report are not inconsistent with the findings of the DEIS Noise Study shown in Figures 7, 8, 9, and 10. Since no evidence is presented on how the Schneider report was prepared it is not possible to utilize it any further in evaluating Stony Creek

DEIS Noise Study Conclusions on Ambient Noise Levels

The commenter inaccurately claims that the DEIS Noise study "concludes that background sound levels in Orangeville are 48 dBA to 58 dBA." The commenter is presumably referring to Table 20 of the DEIS that clearly reports "Leq Ambient Sound" as measured at the four monitoring locations. Nowhere does the DEIS or the DEIS Noise Study represent that these are "background" noise levels.

The commenter assumes the difference between his measured background noise levels and the ambient noise levels of the DEIS Noise Study is somehow related to use of different standards, when in fact the difference is simply that they are reporting different values: ambient levels and not background levels.

The concerns expressed about the Hessler study for Cape Vincent, NY appear to be similarly based on the difference between ambient sound levels and background noise measurements. This comment is not applicable, though, to the proposed Project.

Setbacks to Maintain Background Noise Levels

The commenter states that other agencies have recommended setbacks of 3,280 feet to 1.25 miles as being necessary to keep background levels from not exceeding 6 dB above background levels. Regardless of what agencies may have recommended this and whether such setbacks are actually being used in places where wind farm development is occurring, the commenter is correct to suggest that if an agency desired to have a criteria that ***background*** noise levels not be exceeded by 6 dB for any time of the day, turbines would have to be located 1 mile or more from receptors.

By this same logic, cars would need to be operated 1 mile or more from houses. Suffice it to say, though, a criterion that new noise sources never exceed existing background noise levels is impractical and not necessarily the goal of agencies reviewing the proposed Project. For example, if the Town of Orangeville adopted such a standard, no new farms could be created because of the noise inherent in farming operations.

Use of Either Background or Ambient as a Baseline

To support use of "background" noise as a metric, the commenter quotes his own work. A more appropriate reference might be the NYSDEC Noise Guidelines, that cite use of ambient noise as a baseline.

The NYSDEC Noise Guidelines clearly state that the 6 dB reference refers to ambient noise. On page 14 (and also quoted by the commenter), the NYSDEC Noise Guidelines state:

> "In non-industrial settings the SPL should probably not exceed ambient noise by more than 6 dB(A) at the receptor."

The NYSDEC Noise Guidelines do not directly recommend what noise statistic should be used when implementing the 6 dB rule, but on page 7 it explains the usefulness of Leq as a statistic "related to the average sound level over time." As stated in the same paragraph in the NYSDEC noise guidance,

> "[Leq] is considered directly related to the effects of sound on people since it expresses the equivalent magnitude of the sound as a function of frequency of occurrence and time."

Miscellaneous

The commenter raises additional concerns, beyond whether ambient or background sounds should be used. These are discussed in other sections of the FEIS. Wind shear is discussed in FEIS Section 6.20.24. FEIS Section 6.20.8 addresses the characteristics of wind turbine sound; and FEIS Section 6.20.10 addresses impacts on nighttime sleeping.

6.20.8 Sound Characteristic of Wind Turbines (342, 382)

The sound from wind turbines is variable and periodic thus can be more annoying to the public then a continuous noise of the same average amplitude. The characteristic of the sound generated is important in considering its impact on the public (as discussed in our guidelines). As wind turbine generator noise is characterized by amplitude modulation (whooshing, for example), this should be considered in the analysis as some studies have shown amplitude modulation as an annoyance factor for the public (e.g, "Noise Annoyance from Wind Turbines – A Review", Eja Pedersen, Swedish Environmental Protection Agency, Report 5308, August 2003). In this light, per the "Factors to Consider" section (under "Evaluation of Sound Characteristics") of the DEC guidelines, it may be advisable to add a calculated number of dBA to the generated sound in an attempt to compensate for this characteristic. (Submittal 382– NYSDEC)

A number of reports find that, at the same sound pressure (decibel) level or less, wind turbine noise is experienced as more annoying than airport, truck traffic or railroad noise.

It is not clear whether the distinctive rhythmic, impulsive or modulating character of wind turbine noise (all synonyms for "thump" or "swoosh" or "beating" sounds), its characteristic low frequency component (both audible and inaudible, and also impulsive), health effects of chronic exposure to wind turbine noise, especially at night (see below, page 2), in-phase modulation among several turbines in a wind farm (this can triple the impulse sound level when impulses of three or more turbines become synchronized)" or some combination of these factors explains the annoyance. One or more of these characteristics are likely present depending on atmospheric and topographic conditions, especially at night? Reports based on surveys of those living near wind farms consistently find that, compared to surveys of those living near other sources of industrial noise, annoyance is significantly higher for comparable sound levels among wind farm residents. This provides objective evidence in support of an expectation that a substantial number of those living near wind projects will complain that the noise level they experience is annoying. (Submittal 342 – E-Coustic Solutions)

The impulsive character of wind turbine noise is caused by air turbulence around the turbine blades. There are a number of explanations to this fact, and more than one may apply at any specific wind farm site. For example, eddies in the wind, wind shear (different wind speeds the higher reach of the blades compared to the lower reach), slightly different wind directions across the plane of the blades, interaction among turbines, and the interaction of the blades of a turbine with the tower have each been identified as causes of modulating wind turbine noise. (Submittal 342 – E-Coustic Solutions)

Impulsive sound is considered more problematic for older turbines that had rotors mounted downwind from the tower. The sound was reduced by mounting the rotor upwind of the tower, common now on all modem turbines. This is the type of wind turbine anticipated for the Orangeville wind project. Initially, many presumed that the change from downwind to upwind turbine blades would eliminate amplitude modulated sounds (whooshes and thumps) being received on adjacent properties. However, in a landmark study now referred to in all serious discussions of wind turbine noise, found the impulsive swishing sound increases with size because larger modem turbines are subject to "wind shear" during times of ground level "atmospheric stability," resulting in sound fluctuating 5 dBA between beats, up to 9 dBA. This author has confirmed these phenomena and has measured levels of blade swish of 10-13 dBA. that is, 4 dBA higher than those found by Van den berg. A graph showing the rise and fall of the A-weighted sound levels inside the closed entry vestibule to a home subjected to this type of wind turbine noise is presented below. 'This test site is approximately 1,500 feet from two (2) turbines with sound emission characteristics similar to the turbines proposed for the Invenergy project. It should be noted that the sound levels exceed 40 dBA inside the home. (Submittal 342 – E-Coustic Solutions)

To compensate for the added annoyance of fluctuating or impulsive sound, the convention is to add a penalty of 5 dBA to modeled sound or to subtract an equivalent amount from the allowable numerical sound level. (Submittal 342 – E-Coustic Solutions)

Response: As noted by the comments, modern wind turbines produce a slowly modulating low level mid-frequency aerodynamic sound, often characterized as a “swish”. Depending on wind speeds and other environmental conditions, including the existing ambient sound levels, the turbine sound may be noticeable at times in the community. Whether this sound, or any sound, causes annoyance for a specific resident will depend on numerous factors. As discussed in the DEIS, annoyance is a subjective response that varies among people to a variety of sounds, such as airports, road traffic, and other sounds, including wind turbines. The level of annoyance can depend on how noticeable is a particular sound compared to the existing ambient sound, whether it interferes with an activity (e.g., speaking, listening to the radio, or reading), and non-acoustic factors, such as the listener’s expectations and feelings toward the sound source. As previously explained, the residents closest to the turbines are all participants in the project.

The sound limits in the Town Zoning Code are set specifically for wind turbines and are assumed to take into account the periodic nature of wind turbine sound. Because the sound limits are set specifically for wind turbines, it is not appropriate to add an additional 5 dB “penalty” to account for the fact that it is wind turbine sound.

6.20.9 WHO Recommendations (006, 032, 044, 060, 083, 146, 174, 187, 217, 225, 267, 302, 321, 331, 358)

It is my understanding that the World Health Organization (WHO) currently recommends 35 decibels (A-weighted or (IBA) or not more than 6 (IBA above night time ambient noise levels (as the NYSDEC also recommends for proper sleep). Why is anything higher than that logical, to accept as permissible at non-participating neighbor's property lines? Shouldn't the WHO'S recommendations be the gold standard that wind companies strive to meet, a pre-requisite for all environmental quality reviews, and an automatic for all enacted zoning laws? Setting acceptable sound levels at non-participating neighbor's property lines to 35 dBA, or only 6 dBA above ambient noise levels, could prevent all noise-related health problems should this project be allowed. Rural night time ambient noise levels is reported at 25 dBA according to noise studies compiled for the Sheldon Wind Project. (Submittals 006 – Humphrey, Peter; 032 – Sweetland, George; 044 – Mercer, Susan; 083 – Burgio, Helene; 146 – Dickinson, Darryl; 174 – Malicki, Richard; 187 – Librock, John; 217 – Miller, Elizabeth, 225 – Day, Lonnie, 302 – Ramsey, Donna, 321 – Kaczmarek, Jennifer, 267 – Moultrup, Steven)

Sound - As a Health professional, I was schooled according to World Health Organization (WHO) guidelines. WHO guidelines recommend that sound levels should not exceed 30 decibels (A-weighted or dbA), or not more than 5 dbA above night-time ambient noise levels for proper sleep. Invenergy's recommended acceptable noise levels exceed current ambient noise levels in Orangeville by at least 25 dbA. (Submittal 331 – Barton, Mary Kay)

The World Health Organization identifies sleep deprivation as an adverse health effect. According to WHO "exposure to night noise can damage people's health and (WHO) recommends guideline levels to protect health. The new limit is an annual average night exposure not exceeding 30-40 decibels (dB), corresponding to the sound from a quiet street in a residential area. (Submittal 060 – Makson, Linda; 358 – Makson, Linda (verbal), Submittal 200 – Makson, Paul and Linda)

Response: Average ambient noise levels in the Project Area are discussed in FEIS Sections 6.20.1, 6.20.2, 6.20.3, and 6.20.6.

WHO Background

The World Health Organization (WHO) is a specialized agency of the United Nations (UN) that acts as a coordinating authority on international public health. The WHO's constitution states that its objective "is the attainment by all people of the highest possible level of health." Its major task is to combat disease, especially key infectious diseases, and to promote the general health of the people of the world. WHO documents and recommendations are useful reference points because they typically are based on thorough research, but they are not necessarily the "Gold Standard" for U.S. projects. The WHO is broken into six regional offices, including one for Europe and one for the Americas (the "Panamerican Health Organization").

The WHO has issued two guideline documents on community noise: one issued by the WHO in 1999 and one issued by the WHO Europe office more recently in 2009.[111][112] The comments –

[111] "Guidelines for Community Noise," issued by the World Health Organization, edited by Birgitta Berglund, Thomas Lindvall, and Dietrich H. Schwela, April 1999.

[112] "Night Noise Guidelines for Europe," issued by the World Health Organization, ISBN 978 92 890 4173 7, 2009.

which themselves provide different summaries of the documents - are not an accurate reflection of the contents in either of these two documents.

WHO 1999 Guidelines

The WHO 1999 guidelines recommend that for "good sleep" the nighttime continuous noise (LAeq, 8hr) level inside a bedroom should not exceed 30 dBA. It went on to state that noise ***inside*** the bedroom differs significantly from noise outside the house. The guidelines state that typical noise attenuation from inside and outside the bedroom, assuming a window that is slightly open, is 15 dBA. Thus, the 1999 WHO guidelines in effect recommended sound levels of 45 dBA at the exterior wall of a house at night.[113] The Orangeville standard is consistent with this recommendation.

WHO 2009 Guidelines

The 2009 European WHO guideline focuses solely on nighttime noise. The report gives considerable information on the attenuation of noise levels between inside and outside the house. It states that attenuation with windows closed ranges from 24 dB to 45 dB (depending on the type of construction) and it assumes typical attenuation levels are 15 dB with windows open, and 21 dB as an average with windows slightly open.[114] In making recommendations on noise levels, it uses a year-long energy average statistic, L_{night}, which is defined as the A-weighted Leq calculated over all nighttime hours in a full year period.[115] The 2009 European WHO guideline recommends that L_{night} be limited to 40 dB at the exterior wall of houses so as to prevent adverse health effects from nighttime noise. The guidelines acknowledge that many locations may already be out of compliance with this recommendation. As an alternative, it recommends an interim target of 55 dB that not be exceeded while policy makers work to lower nighttime noises.[116]

Comparison of Comments to WHO Guidelines

In relation to the comments:

- Counter to what is said in the comment(s), the WHO guidelines do not recommend noise levels at property lines. The WHO recommends noise levels inside of bedrooms. FEIS Section 6.20.51 discusses noise levels at property lines.
- Counter to what is said in the comment(s), the WHO guidelines do not recommend noise limits of 35 dBA or 30 dBA. The WHO recommends levels of 40 dB, 45 dB, and 55 dB measured outside of the house.
- Counter to what is suggested in the comment(s), the WHO guidelines do not suggest limits on instantaneous noise levels. The WHO recommendations do give limits that are year-long Leq values.
- Counter to what is said in the comment(s), the WHO guidelines do not include recommendations on increases in noise levels above ambient. The WHO guidelines do not recommend limiting increases to either 5 dB above ambient or 6 dBA above ambient, as the two comments state. Guidelines from the NYSDEC do discuss

[113] WHO, 1999, pg 46.

[114] WHO. 2009, section 1.3.4.4, page 9, also section 1.3.5, page 10.

[115] WHO, 2009, section 1.3.4.1, page 8.

[116] WHO, 2009, section 5.6, page 109.

recommended increases above ambient. FEIS Section 6.20.24 discusses the NYSDEC guidelines.

Compliance of Project to WHO Guidelines

FEIS Section 4.2 summarizes results of an updated analysis on Project noise levels. Table 9 lists estimated Project noise levels at the nearest dwelling and at the dwelling with the loudest predicted Project noise levels.

As shown in Table 9, Lnight from the Project is estimated to be 39.6 dBA for the non-participating dwelling with the highest Project noise levels. This level is less than the 45 dBA limit recommended in the 1999 WHO guideline. It is also less than the more restrictive 40 dBA limit recommended by the 2009 European WHO guideline. At other non-participating residences, Project noise levels will be less. Thus, at all non-participating residences, the proposed Project is expected to comply with the most recent WHO guidelines on nighttime noise.

6.20.10 WHO, Nova Scotia, and Maine Medical Association (342)

It is important to distinguish recent studies that link low frequency noise impacts to impairment of the vestibular system or other organs from well-established findings that wind utility noise from turbines operating at distances of up to one mile is a cause of sleep disturbance for a vulnerable minority, and chronic sleeplessness results in adverse health effects. The discussion in this section will focus on the commonly accepted factors involved in sleep disturbance and the health problems associated with sleeplessness.

The World Health Organization (WHO) has a long established position that considers sleep disturbance to be an adverse health effect and to lead to secondary adverse health effects. Chronic sleeplessness, in turn, causes a variety of health effects, including "primary physiological effects… induced by noise during sleep, including increased blood pressure; increased heart rate; increased finger pulse amplitude; vasoconstriction; changes in respiration; cardiac arrhythmia; and an increase in body movements." "Exposure to night-time noise also induces secondary effects, or so-called after effects includ[ing] reduced perceived sleep quality; increased fatigue; depressed mood or well-being; and decreased performance." Waking up in response to nighttime noise decreases as people get habituated to the noise; however, "habituation has been shown for awakenings, but not for heart rate and after effects such as perceived sleep quality, mood and performance."

In 2007 WHO issued the Night Time Noise Guidelines (NNGL) as an update to the 1999 Guidelines discussed above. These guidelines are intended to replace all earlier guidelines with respect to sleep and noise. They supersede the prior guidelines that recommended that sleeping rooms be protected from outside sound that raises sound levels inside to above 30 dBA. Because the earlier guidelines provided a limit in terms of interior sound levels and also included special conditions when low frequency sounds were present outside the home WHO decided that there was too much room for interpretation of their research findings. Thus, in 2007, following several years of research by respected experts in health and noise and three major meetings to present their findings WHO issued the new guidelines. This time, they elected to establish the guidelines for the outside façade of the home and not the sleeping area. This avoided issues such as whether windows are open and if so how much and also issues of various types of building construction that affect how low frequency sounds penetrate into the home. The focus was to establish science based guidelines that would promote healthful sleep.

The table excerpted from WHO's 2007 guideline (the same table is provided in the 2009 update to the 2007 report) clearly states that to avoid adverse health effects during sleeping hours that the sound levels at the outside wall of a home not exceed 30 dBA at night. It also states that when sound levels outside a home are 40-55 dBA that there is a sharp increase in adverse health effects; that people would be attempting to adapt to cope with the high outdoor noises, and that the more vulnerable members of the exposed population would be severely affected. These are the same sound levels that Invenergy has claimed are compatible with the community and safe for the people living under and adjacent to the turbines. WHO's descriptions of the health effects on the exposed populations closely parallel the experiences of people in other communities where wind utilities are currently operating.

The new guidelines from WHO and other recent medical research has led several health organizations to call for serious research before more wind turbines are located near people's homes. Recently, Health Canada, which functions much as the US Center for Disease Control does in the US, issued a position statement calling for reconsideration of a wind utility project in Nova Scotia that would result in sound levels at' homes similar to those projected for the Invenergy project. The basis for their statement includes the new medical research, Guidelines such as WHO's, and the existence of other projects in Nova Scotia where the studies submitted for permitting showed no potential for health risks or complaints but operation of the utilities resulted in them anyway.

Just this week, the Maine Medical Association, which has been evaluating new health research on residents of Maine's first wind utility at Mars Hill, issued a Resolution stating:

> *"WHEREAS, there is a need for modification of the State's regulation process for sting wind energy developments to reduce the potential for controversy regarding siting of grid-scale wind energy development and to address health controversy with regulatory changes... " (emphasis added)*

New York's medical community has yet to address the health controversy with a call for regulatory changes, but the situation in New York is similar to that in Maine. Public officials with a duty to protect the public health and welfare should seriously consider whether it is a wise decision to grant permits to a utility operator that by its own admission, will expose the public to unsafe conditions 24 hours a day and 365 days a year. (Submittal 342 – E-Coustic Solutions)

Response: The 2009 WHO guidelines are discussed in FEIS Section 6.20.9. The Lead Agency concurs that the 2009 European WHO guidelines investigated nighttime noise as a potential health effect because of its potential to disrupt sleep. However, as laid out in FEIS Section 6.20.9, the nighttime noise levels from the proposed project are not enough to trigger the effects discussed in the 2009 WHO guidelines. Overall, this comment mischaracterizes the conclusions of the WHO guidelines.

Nova Scotia

The commenter presumably refers to an August 9, 2009 letter from Health Canada relaying its comments on noise studies prepared for the Digby Wind Power Project.[117] The Digby project

[117] August 6, 2009 letter by Health Canada (Allison Denning) to Nova Scotia Department of Health (Steve Sanford), Re: "Health Canada's response to the Digby Wind Power Project Addendum, Digby, Nova Scotia."

was a proposal by Skypower Corp. to install 20 GE 1.5sle wind turbines at an ocean-side site in Digby County, Nova Scotia.

The commenter mischaracterizes the Canada Health letter. The referenced letter compares predicted sound levels to WHO criteria, but it is not a "position statement," it does not cite "new medical research" by the WHO as the basis for the letter, and it does not call for reconsideration of the proposed project.

The cited letter is an example of a careful review of a proposed project, as is being done by the analyses in the DEIS and FEIS for the Stony Creek Wind Farm.

Maine Medical Association

The Maine Medical Association approved the referenced resolution in September 2009.[118] In addition to the quote provided by the commenter, the resolution goes on to state that the Maine Medical Association encourages studies of wind turbine health effects be evaluated by "independent qualified researchers at qualified research institutions" and to emphasize the need for "evidence-based" studies. Nothing in this Maine Medical Association resolution indicates the noise studies or DEIS or FEIS evaluations for the Stony Creek Wind Farm are inadequate or in error.

6.20.11 WHO; Brain Wave Study (049, 344)

I would like to address the human side of this Stony Creek debacle. I hate what this has done to Orangeville- pitting neighbor against neighbor, friends, and even family. I know I'm not the only one who feels this way. I have lived in Orangeville for 46 years. In 1975 we built our current home back next to our pond and woods for more privacy and quiet from road noise from rt. 238. Almost all of the building supplies were salvaged. We tore down 3 barns- our young kids helped load the dump truck, pulled nails and sorted wood. I was hands on part of everything from digging foundation to roofing. I really value the solitude that our place provides. I do not want to listen to industrial noise day and night, and I'm too old to start over tearing down barns someplace else.

At one time I was told, "If you don't like the turbines just move." JUST MOVE!! How do you move fruit trees, raspberry, and blueberry bushes, hundreds of flower bulbs and perennials, rocks that I hauled out of the creek for patios, hiking trails through the woods, and a foot bridge over ironically Stony creek. How do you just move?

I am very concerned about the known health effects that lack of sleep can cause. Noise levels that disturb sleep are quite low. 32 dBA cause people to move in their sleep. 35dBA cause arousals that can be seen on a brain wave study (EEG). Conscious awakenings occur at noise levels of 42 dBA. This is why the World Health Organization recommends no more than 30 dBA as an acceptable indoor nighttime noise level. (Submittal 049 – Nevinger, Mary; 344 – Nevinger, Mary (verbal))

Response: As discussed in Section 6.20.9, the WHO does not recommend noise levels be maintained below 30, 32 or 35 dBA. As shown in the figures in the DEIS sound study, existing ambient sound levels exceed 32 and 35 dBA for most hours, including nighttime hours.

[118] Maine Medical Association, 2009 Annual Session, September 11-13, Resolution #7, submitted by Albert Aniel, MD and Michael Nissenbaum, M.D.

6.20.12 Model Accuracy for Nighttime Sounds (342)

The background sound levels obtained by independent acoustical consultants and also by Invenergy's acoustical consultants show that existing nighttime conditions outside homes are below 33 dBA for properties not near RT 20A and below 30 dBA for homes not near the highway. Operation of wind turbines will increase sound levels on a routine basis to 40-45 dBA for many local residents under optimistic modeling projections. The sound levels projected in the model studies represent optimum operating sound emissions, are well over the NYDEC guideline of a 6 dB increase in background sound. In practice sound levels at these properties will often be 5 to 10 dB higher than the model's estimates. For Invenergy to meet those guidelines the limits for sound at affected properties would need to be set at a maximum of 40 dBA and lower for properties not near the highway. The studies and presentations by Invenergy show that estimated sound levels at properties adjacent to and inside the footprint of the proposed utility will exceed the nighttime sound levels WHO has identified as a health risk. Experience with other wind utilities operating turbines with similar sound emission characteristics shows that wind turbine noise levels at distances of 1500 feet can exceed 50 dBA and that sound levels inside homes can easily exceed 30 dBA with maximum sound levels exceeding 40 dBA.

Based on the above, the Invenergy project, as proposed, will, with a high degree of certainty, have noise and health impacts that are "significant." (Submittal 342 – E-Coustic Solutions)

Response: FEIS Sections 6.20.1, 6.20.2, and 6.20.3 discuss ambient noise levels, and FEIS Sections 6.20.6 and 6.20.13 discuss compliance with NYSDEC Guidelines. As stated in the DEIS and shown in Table 9, wind turbine noise emissions will not be in the range of 40-45 dBA for all hours.

The commenter has provided no evidence to support his statements that (i) actual turbine sound emissions will be 5-10 dB higher than predicted by the DEIS sound study, and (ii) turbine noise levels at 1500 feet will exceed 50 dBA. On the other hand FEIS Section 4.18 presents evidence from post-construction noise measurements at Sheldon that indicates the model accurately predicts turbine noise emissions, and FEIS Section 4.18 includes evidence that total noise at 1500 ft from an operating turbine is in the range of 42 and 45 dBA, values which include both ambient noise and the noise from the turbine.

Compliance with WHO guidelines is discussed in Section 6.20.9.

6.20.13 Ldn and NYSDEC Guidelines (382)

As our guidelines discuss (below), given situations which involve night-time noise (such as that generated by wind projects), a discussion of impacts on residents should consider possible disruption during the night. As mentioned below in the quote from our Guidelines, weighting night-time noise more heavily, such as the Ldn, may be appropriate as a supplemental means to assess possible effects on local residents. As stated in our guidelines:

> *"….Equivalent Sound Level (Leq) …. can be combined with other types of noise analyses such as Composite Noise Rating, Community Noise Equivalent Level and day-night noise levels characterized by Ldn where an Leq(24) is measured and 10 dBA is added to all noise levels measured between 10 pm and 7 am. These different types of noise analyses basically combine noise measurements into measures of cumulative noise exposure and may weight noise occurring at different times by adding decibels to the actual decibel level. Some of these*

analyses require more complex noise analysis than is mentioned in this guidance."

However, care should be taken that this approach not substitute for analysis involving short term worse case analysis – such as worse case 10 minute nighttime sound pressure level. (Submittal 382– NYSDEC)

Response: Project Ldn noise levels were calculated in the updated FEIS noise analysis. Refer to FEIS Section 4.3 and FEIS Appendix A.7.g for more information on Ldn values.

Table 48 compares Project Ldn values to ambient Ldn values for the four locations where ambient measurements were collected for the DEIS Noise Study. In all four locations, Project Ldn noise levels are less than the ambient Ldn levels.

Note that the Project Ldn values levels in Table 48 are not a "worse case" situation, instead they are annual average Ldn values calculated assuming the turbine operates at a range of wind speeds during daytime and nighttime hours. As discussed in FEIS Section 4.3, if winds were to stay at 25 mph and higher for a full 24 hour period, Project Ldn levels would be 6.4 dBA higher than the high wind Leq values and higher than the annual average Ldn values in Table 48. But for this situation, ambient Ldn values would also likely be higher than what is shown in Table 48.

Table 48. Ldn Noise Levels: Ambient Levels and Project Levels

Location	House ID	Distance to Nearest WTG	Average Ambient Noise, Ldn	Average Project Noise, Ldn	Difference
Almeter Road (Schabloski Residence, Ambient Location 1)	H-0332	1,301 ft	57 dBA	43.2 dBA	14 dB
Centerline Road (Tozier Residence, Ambient Location 2)	H-0152	1,057 ft	52 dBA	47.5 dBA	4 dB
NYS Route 20A (Magee Residence, Ambient Location 3)	H-0209	1,325 ft	63 dBA	44.5 dBA	19 dB
Krotz Road (Straub Residence, Ambient Location 4)	H-0255	1,429 ft	52 dBA	45.3 dBA	7 dB

Notes:

Ldn values for Project noise in this table are calculated assuming the distribution of wind speeds during daytime and nighttime hours is the same as the distribution for these periods shown from wind data collected for multiple years in the Project Area.

6.20.14 Nighttime Solitude (069)

Enough noise to keep one awake all night in place of perfect solitude, silence? This Plan is simply unacceptable. (Submittal 069 – Hopkins, Mary Jo)

Response: Comment noted. Please refer to Section 6.20.2 for a discussion of ambient sound and to Section 6.20.9 for a discussion of WHO guidelines for nighttime noise.

6.20.15 Point Source Assumption (382)

The sound study provided by the applicant assumes that wind turbine generators (WTG) will act as a point source in generating sound. However, as WTG are commonly configured in a line, noise may not drop off as quickly as possibly assumed. It is not clear if this consideration is examined. (Submittal 382– NYSDEC)

Response: The program model properly accounts for multiple wind turbine sources and sound attenuation with distance. Each turbine is modeled as a point source, the sound of each turbine is propagated to each community location, and the contribution of each turbine is then added together at each community location. Note that for a source that is entered into the program model as a line source (e.g., a highway), the program still automatically breaks the line source into a set of point sources for its model calculations.

6.20.16 Noise from Multiple WTG (339, 382)

Furthermore, particularly at night, wind speeds may be relatively uniform and thus a synchronicity in the sound from various WTGs may result in an unexpected additive effect from an "in phase" generation of sound from the various WTGs. This is particularly the case since WTG blades are at most 60 degrees out of phase. (Submittal 382 – NYSDEC)

Are the turbines on Gassman Road going to echo off the turbines on Buffalo Road, and how will it affect the houses in between? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: The model includes the contribution of each turbine, and assume that each turbine is producing maximum sound and each residence is downwind from each turbine. The 105 dBA maximum sound power level is an "energy average" Leq value calculated over 1 minute period. Some variation could occur within the one minute period, but because of the nature of the Leq averaging, variations would be more below the rated Leq level than above it, and any intra-minute variations above the rated sound power level would be modest. The analyses are sufficiently conservative by assuming that every turbine is at maximum rated sound level and all turbines are oriented to give maximum downwind noise levels to every point in the Project Area.

The reflected sound from one turbine off a second turbine will not be significant compared to the direct sound from each turbine.

6.20.17 Uncertainty in Noise Predictions (382)

Error is a component of any study. Some discussion is encouraged to focus on the likely degree of measurement and model error. An analysis should be included in the Final Environmental Impact Assessment to ensure that the results are not in danger of underestimating possible impacts. One possible source of error to discuss is the fact that sampling represented only several days and this may not represent atmospheric conditions common over the course of a year. (Submittal 382– NYSDEC)

Response: Uncertainty exists in all measurements and calculations, including the assessment of ambient noise levels and the predictions of turbine noise emissions. The pre-construction noise estimates done for the proposed Project use best estimate inputs and methods to predict sound levels.

Ability of the model to accurately predict post-construction noise emissions is demonstrated by the post-construction noise assessment performed in Sheldon and discussed in FEIS Section 4.18. These results found that the model may actually over-estimate turbine noise emissions by 1 dB or more.

6.20.18 Substation Noise (341)

Noise: Pages 107- 111 - Analysis of operational noise does not address potential noise impacts on residences near the proposed substation - switchyard site on Centerline Road. High voltage transformer equipment is a likely source of operational noise including generation of pure tones. Ambient noise level of the site and nearby residences should be determined, and manufacturer information for the transformer model selected should be used to determine the probable level of operational noise expected to result from facility operation. Mitigation design should be considered early: is usually more successful and less costly if incorporated into initial site design rather than following facility installation, when site constraints and facility equipment layout have been established. (Submittal 341 – NYS Dept of Public Service)

Response: As discussed in FEIS Section 4.3, the substation main transformer was modeled in the updated noise study as a point source with a sound power level of 102 dBA. FEIS Appendix A.7.d is a map that shows predicted sound levels in the vicinity of the substation.

As shown in the map, noise from the transformer drops relatively quickly with distance. At a distance of 500 ft (from the center of the substation), the sound level is predicted to be 47 dBA, and at a distance of 1,000 ft, the sound level is predicted to be 43 dBA.

The closest residence to the substation is a non-participating residence located approximately 1,250 ft away, where the sound level is predicted to be 42 dBA (or less if the effect of trees between the substation and the house were considered). The transformer sound will have a tonal component that is inherent to the transformer. If a tonality penalty of 5 dB is added to the predicted noise level, and equivalent noise level of 47 dBA would exist at this residence. This level is less than the Town Law limit of 50 dBA limit.

There are also two non-participating residences between 1,800 and 1,900 feet from the center of the substation. At these distances, noise from the transformer is predicted to be between 40 and 41 dBA, again ignoring the screening effect of trees. Noise levels at these locations will be under 50 dBA, even after application of a 5 dB tonality penalty.

To ensure noise levels at residences are as low as or lower than the levels predicted in the FEIS noise analyses, Stony Creek will use a main station transformer that has a sound power level of 102 dBA or less.

6.20.19 Ecogen; Model Accuracy (340)

CSOO also continues to have serious concerns about the noise that would be generated by operation of the Ecogen project. These concerns are based primarily on technical comments on the Ecogen application prepared by our acoustic engineer Richard R. James, and supporting documentation and references provided by Mr. James, provided to you under separate cover. These concerns were also stated in comment letters and supporting information provided to you during the preparation of the 2009 rezoning, dated May 13, 2009; June 5, 2009; and September 22, 2009. Those comments should be considered in your review of the Stony Creek project proposal.

In particular, there continues to be controversy over the analytical methods used in the DEIS to assess noise impacts. Wind developers commonly adopt an approach to noise assessment that achieves results supporting conclusions that background sound levels are around 45 dBA, wind sound will mask turbine noise, and total noise impacts will be insignificant for nearly everyone within one mile of a wind farm project. As detailed in Mr. James' comments, each of these conclusions are found in the DEIS's noise assessment and each relies on a novel approach to acoustics and cannot be sustained on professional grounds. As expected, towns that have credited this approach to noise assessment and granted a permit for a wind farm have found noise levels during subsequent operations are generating a level of complaints the developer's model was unable to predict. This is the consequence of flawed modeling methods. (Submittal 340 – Abraham, Gary)

Response: The Ecogen project is not the subject of this SEQRA review and no evidence has been provided on the Ecogen project. On the other hand, substantial evidence has been provided, and summarized in FEIS Section 4.18, that the model used for the DEIS sound study is an accurate predictor of actual noise emissions from the wind turbines.

The comments of Mr. James are evaluated throughout this FEIS.

6.20.20 Noise Model and Terrain (342)

Studies on behalf of Invenergy presenting computer simulations that purportedly estimate the "worst-case" sound levels that will be received in the community should be viewed with serious skepticism. Models are representations and simplifications of complex interactions between noise emitters, and their surrounding environment. Models are not precise instruments, and are not any better than the input data used to represent the noise source and accuracy of the algorithms used to represent how sound decays with increasing distance from the location of each source. For specific situations of modeling wind turbines in complex terrain, such as ridges and valleys, acoustical models are seriously challenged. The ability of the model to accurately replicate how the sounds are blocked by terrain or reflected by terrain is especially weak Errors in models of wind turbine noise propagation located on flat terrain have been shown to have errors understating operational sound levels of 5 to 10 dB or more. It would be expected that errors of this magnitude or higher would be found in models of the community near Invenergy's footprint. (Submittal 342 – E-Coustic Solutions)

Response: No evidence has been provided to support the claims in this comment. However, evidence has been provided, and summarized in FEIS Section 4.18, that the model used for the DEIS sound study is an accurate predictor of actual noise emissions from the wind turbines.

As stated in the DEIS Noise Study, the model takes into account variations in terrain, using USGS data on ground elevations.

It is noted that the Orangeville noise standards are adopted by law and thus, post-construction compliance with noise regulations can be enforced by the town.

6.20.21 Sound Power Values (342)

Data used to represent the noise emitted by the terms was obtained using a test procedure standardized under IEC 61400-11. This standard does not purport to be reporting 'worst case' conditions. Yet, the wind industry noise studies commonly claim that they are representing worst case conditions. Appendix A of that standard provides a list of known conditions that will cause

an increase in wind turbine sound emissions above those they report. One of these factors is involved in causing blade swish, which can raise the sound levels as shown in the earlier example for a residence in Bliss New York, by as much as 10 or more above the levels predicted by the utility developer's noise model for the project. The Invenergy model provides estimates of sound levels similar to those in the table to the left for the most impacted residential properties. If the input data understates the real sound emissions by 10 dBA or more at Bliss; then, it is reasonable to expect that the operational sound levels of the turbines will exceed 50 dBA during periods when the conditions not reflected in the input data are present for this project, too. This just happens to be the common condition for summer nights and is also often the condition for winter during high wind conditions. (Submittal 342 – E-Coustic Solutions)

The IEC tests are conducted to allow prospective buyers to compare the sound output of different makes and models of wind turbines. This is similar in concept and utility to the EPA mile ratings on new vehicles. The information is standardized, but is not indicative of what any driver will actually experience under real world conditions. The data is useful as input data for a sound model, but it is not intended to represent the higher noise levels that are caused by the conditions listed in Appendix A of that standard. (Submittal 342 – E-Coustic Solutions)

Response: As discussed in FEIS Section 4.18, comparison to post-construction noise measurements at Sheldon has shown that the model used for the DEIS sound study is an accurate predictor of actual noise emissions from the wind turbines. The Sheldon and Stony Creek sound models both used the manufacture's sound power levels for the turbines. The Sheldon model produced realistic results; there is no reason to believe that using manufacturer's data for noise modeling at Stony Creek would produce erroneous results.

The periodic nature of turbine sound emissions is discussed in FEIS Section 6.20.8.

6.20.22 Noise Model Documentation (342)

Furthermore, studies that use models normally disclose the strengths and weaknesses of the models and also disclose the input data and other important assumptions. They give appropriate cautions and disclose error tolerances for all possible known conditions that the model does not consider. This is not done in the Invenergy study. The model is poorly documented and missing important data if the study is to be critically reviewed by others competent to do so. (Submittal 342 – E-Coustic Solutions)

Response: The commenter is incorrect in that the DEIS Sound Study appropriately documents the inputs and methods used to predict noise levels from the Project. Further, all unbuilt projects use models. Uncertainty in the noise estimates is discussed in FEIS Section 6.20.17.

6.20.23 Noise Model and Average Weather Conditions (342)

For example, even though blade swish is a well studied and recognized phenomena the increased noise produced by wind turbines due to turbulence is not considered in the test results. In addition, only one simple, and likely inappropriate, set of weather assumptions are made. Yet, variations in weather have large impacts on turbine noise. Wind turbine blades and hubs where the sounds are produced do not operate in the same weather conditions as the people who live around them experience. Yet, models always assume some moderate weather condition as input for the computation of air absorption and other meteorological effects which do not apply to the sound's propagation path until the energy is almost at ground level. The list in IEC 61400-11's

Appendix A includes other factors that are common to real-world conditions not addressed in the model. All of which can lead to higher sound emissions. (Submittal 342 – E-Coustic Solutions)

Response: The periodic nature of turbine sound emissions is discussed in FEIS Section 6.20.8.

The model uses industry-accepted propagation factors associated with normal meteorological conditions. In response to the potential effects of meteorological conditions on turbine sound, IEC 61400-11 Annex C states:

> Turbulence is a natural part of the wind environment, and as it passes through the rotor disk, it causes unsteady pressures on the blades that radiate noise. Studies suggest that at high power levels or wind speeds, noise due to inflow turbulence can become the dominant source of aerodynamic noise emission from a wind turbine.

The Stony Creek analysis used turbine vendor data for maximum noise emissions, which would cover turbulent conditions.

6.20.24 Wind Shear (291, 342)

The DEIS does not adequately address the effect of wind shear (i.e., high wind speeds aloft and low wind speeds at ground level, producing a more notable effect for residents where they have a quiet ambient, but turbines are generating near maximum noise). (Submittal 291 – Stantec)

Atmospheric conditions should be considered in potential impacts on nearby residents. And while stable air conditions tend to represent worst case, the effect may be greater at night than commonly thought. A Swedish study ("Human Response to Wind Turbine Noise", Eja Pedersen, Goteborgs Universitet, 2007) indicates that an additional complicating factor may be at play: wind velocity may be nearly double that anticipated at hub height during nighttime stable atmospheric conditions. Thus resultant sound levels might be much higher than anticipated relative to background. In any case, whether this proves to be an issue or not, care should be taken to compare likely lower background noise levels at night and consequent possible higher spreads between background and wind turbine generated sound at a time when annoyance may be the greatest. Stable atmospheric conditions at night when the difference between ground level wind and hub height wind speeds may be most pronounced should be carefully examined. (Submittal 382– NYSDEC)

The phenomenon of wind shear coupled with ground level atmospheric stability refers to the boundary between calm air at ground level and turbulent air at a higher altitude.

> *"A high wind shear at night is very common and must be regarded a standard feature of the night time atmosphere in the temperature zone and over land."*

A recent paper presented at the 2009 Institute of Noise Control Engineers, Noise-Con 2009 conference in Ottawa, Canada on background noise assessment in New York's rural areas noted:

> *Stable conditions occurred in 67% of nights and in 30% of those nights, wind velocities represented worst-case conditions where ground level winds were less than 2 m/s and hub-height winds were greater than wind turbine cut-in speed, 4 m/s." (Van den Berg)*

Based on a full year of measurements every half-hour at a wind farm in Germany, Van den Berg found:

> *"the wind velocity at 10m(eters) follows the popular notion that wind picks up after sunrise and abates after sundown. This is obviously a "near-ground" notion as the reverse is true at altitudes above 80m….after sunrise low altitude winds are coupled to high altitude winds due to the vertical air movements caused by the developing thermal turbulence. As a result low altitude winds are accelerated by high altitude winds that in turn are slowed down. At sunset this process is reversed."*

In other words, when ground-level wind speed calms after sunset, wind speed at typical hub height for large wind turbines (80 meters, or 262 feet) commonly increases. As a result, turbines can be expected to operate, generating noise, while there is no masking effect from wind-related noise where people live.

> *"The contrast between wind turbine and ambient sound levels is therefore at night more pronounced."*

In addition, as the turbines sweep from top to bottom under such conditions the blade tip encounters slightly different wind velocities creating unexpected turbulence that results in rhythmic swishing noise. Such calm or stable atmosphere at near round altitude accompanied by wind shear near turbine hub height occurred in the Van den Berg measurements 47% of the time over the course a year on average, and most often at night.

Environmental impact statements prepared for wind developers commonly assume that winds during operation of wind turbines will generate "masking" noise as the wind at ground level rustles vegetation. However, this ignores the effect of wind shear, which as described above, van den Berg and others have found results in no masking effect, because calm air at ground level often coincides with strong winds at turbine hub height Van den Berg found this occurs more than half the time at night, when the expectation of quiet is greatest. Mr. Schneider's study found that these conditions are present on approximately lout of every nights in rural New York. (Submittal 342 – E-Coustic Solutions)

Response: The "atmospheric conditions" and "unstable atmosphere" referred to in the comments are apparently the common situation where wind speeds are higher with increased height above ground level. This is not a unique or unusual occurrence. In fact, wind turbines are designed with tall towers precisely because it is known that winds speeds are higher at greater heights above ground level. Meteorologists use the term "wind shear" to refer to the fact that wind speeds increase with height.

The amount of wind shear at a given location will vary with weather conditions, but, as discussed on DEIS page 109, wind speeds at 10m above ground level will generally be about 70% of the wind speed at 80m above ground level. The height of 10m is typically used to represent "ground level" as this is the height that most airport weather stations use to measure and report

wind speeds. Actual speed at 2 m above ground level may be significantly less than the wind speed at 10m due to local shielding from trees, buildings, or other obstacles.

DEIS Table 22 accurately presents turbine noise emissions as a function of wind speed at both hub height and at 10 m above ground level. But the DEIS and FEIS analyses do not assume that wind noise will consistently "mask" the noise emissions of the wind turbines. As shown in the DEIS Noise Study (Figures 7-10) ambient noise levels at typical receptors in the Project Area vary with time and do not show a strong correlation to wind speed. Thus, the assessment of increases in ambient noise levels discussed in FEIS Section 6.20.6 and 6.20.24 do not rely on unrealistic assumptions of wind shear levels to show compliance. Instead, they use noise levels that have been presented as a function of wind shear (or atmospheric conditions) and they use expected ambient levels, regardless of wind conditions.

6.20.25 Time Averaging and NYSDEC Guidelines (291, 342)

We do not agree that the project will always meet the NYSDEC noise policy of less than 6 dB increase over ambient. Please elaborate on the following concerns regarding the NYSDEC policy:

> *(a)The effects of wind shear may cause situations (hours, particularly at night) where there is a very low ambient near the ground and the turbines are turning under high wind speeds).*
>
> *(b) Figures 15 and 16 demonstrate this effect where very low sound levels are measured despite high wind speeds aloft, particularly for measurement locations 2 and 4 which are more rurally situated. Locations 1 and 3 see less influence, but these are highly influenced by local roadways. Nonetheless, all ambient locations show some effect of this.*
>
> *(c) All ambient locations excepting location 1 experience periods where the sound levels are very low (i.e., less than 35 dBA), typically at night. During such periods turbine noise may be significantly higher given high winds aloft suggesting possible increases over the ambient of more than 10 dB on occasion, and more than 6 dB often. During these periods, complaints are considered likely to occur.*
>
> *(d) Comparing the average sound level over the entire record of ambient measurements (i.e., 2 weeks) is inappropriate as high sound events (e.g., traffic, activity near the noise monitor) will skew the results to a higher ambient, even though on a shorter term basis sound levels could be quiet. Figures 7,8,9 and 10, and 11/12, show this influence. (Submittal 291 – Stantec)*

Although the average ambient sound levels over the entire ambient monitoring period (i.e., two weeks) suggests that the predicted project sound levels will be less than 6 dB above ambient levels, this approach inherently weights louder periods more heavily. Given the widely varying ambient sound levels measured throughout the study area, and the low background levels particularly at night-time, additional consideration should be given to assessing the short-term (e.g., I-hour) influence of the wind turbines as such durations tend to drive the frequency of noise complaints. In particular, all ambient monitoring locations show periods where the background sound levels are below 30 dBA, in some cases for extend periods (per Figures 7-1 0 of the acoustic study). Further, the scatter plots vs. wind speed (Figures 15 and 16) shows that such low

sound levels occur during high wind speeds when turbines will be producing their maximum sound levels. This result suggests that during some periods (typically night-time inversion conditions when wind shear is pronounced), the project noise may be more than 10 dB above the ambient sound and often more than 6 dB. Hence project noise could be very noticeable and likely objectionable. As a result, we do not concur that NYS DEC policy DEP-00-1 objectives will generally be met based on the available information. Additional review of the likelihood, frequency, and conditions when such periods that may drive complaints could occur should be assessed. Given that the only way to mitigate such occurrences is likely through increased separation distance, such effects may be unavoidable given the project's current design. (Submittal 291 – Stantec)

In spite of these factors [previous paragraphs on suggested modeling inaccuracies are covered in other sections of the FEIS] that lead models to underestimate the sound levels that will be experienced by people living in the footprint of the project the model of the project shows that many homes will experience sound levels of 45 dBA on a routine basis. When looking at the homes that are within the 40 dBA footprint, it can be seen that almost all of the homes in the Orangeville community are included. (See contour map of operational sound levels from Acentech study attached to this report.) Given that the April l, 2010 study of background/ ambient sound levels show that the properties, including those near RT 20A range from a low of 25 dBA to 33 dBA. Applying the NYSDEC guidelines for the acceptable increase in background sound level shows that the wind turbine project should not exceed 40 dBA for properties along RT 20A and 30 to 35 dBA for properties north al1.d south of US 20A not located on the highway. (See table of Orangeville background ambient sound levels above.) The wind turbine project does not meet the NYSDEC Guidelines for compatibility with existing properties. (Submittal 342 – E-Coustic Solutions)

Response: As a first matter, the the comment in Submittal 342 continues the commenter's misstatement of the NYSDEC policy and the appropriate responses are incorporated herein.

Statements in the DEIS and the DEIS noise study that the project is expected to meet the NYSDEC noise criteria are based on assumptions that: (i) ambient noise level at noise receptors in the Project Area is 45 dBA, (ii) noise receptors are residences in the Project Area; and (iii) maximum noise emissions from the wind turbines will be those predicted in the DEIS Noise Study.

<u>Use of Overall Ambient Sound Levels</u>

Compliance with NYSDEC criteria assumes use of an overall ambient sound level that accounts for the full range of ambient conditions, including both day and night. It does not assume different ambient levels for different times, and as the comment indicates, if different ambient levels are used to evaluate compliance with the NYSDEC criteria, the Project will not meet the 6 dB NYSDEC noise criteria for all periods.

Notably, the NYSDEC Noise Criteria does not state that the 6 dBA noise criteria is a standard or that it should be applied for every instant of time, and it does not specify what period of time should be used to determine overall ambient levels. But careful review of the NYSDEC guidance indicates it is likely intended to be used with ambient levels expressed as relatively long term Leq averages:

- On page 7, the NYSDEC guidance discusses use of Leq, stating that it is a term that relates the average of sound energy over time. Further, it says that Leq correlates well

to other types of analyses such as Composite Noise Rating and Community Noise Equivalent.

- On page 12, the NYSDEC guidance discusses "overall sound," saying, "Part of the overall assessment of sound is the Equivalent Sound Level (Leq) which assigns a single value of sound level for a period of time in which varying levels of sound are experienced over that time period. The Leq value provides an indication of the effects of sound on people. It is also useful in establishing the ambient sound levels at a potential noise source."
- On page 20, the NYSDEC guidance discusses typical ambient sound levels. It suggests ambient levels may be 35 dBA in a wilderness area and 45 dBA in a rural farm land area. If the NYSDEC guidance expected ambient levels to be relatively short periods, then its discussion of ambient levels would need to include discussion of ambient levels for different times of the day – and it does not.

Nighttime Ambient Noise during Periods of High Wind

As discussed in FEIS Section 6.20.2, some sites do show a trend toward higher ambient noise levels with increasing wind speeds, and those sites that do not often have higher overall ambient levels. One of the sites monitored, Site 2 on Orangeville Center Road, shows a trend toward higher ambient noise levels with increasing wind speeds. Nonetheless, it is possible that at some wind sheltered sites there could be periods when ambient noise levels are relatively low (i.e., 30 dBA or less) but wind speeds are high enough to enable turbines to operate with noise levels of 35 to 45 dBA (assuming the location is approximately 1,500 feet from the nearest turbine). The possibility of such periods occurring, however, would not represent non-compliance with the NYSDEC guidelines, as the NYSDEC guidelines are interpreted as using overall ambient Leq levels.

Wind Shear

FEIS Section **Error! Reference source not found.** discusses how wind shear is accounted for in results of the DEIS and FEIS Noise Studies. While it is expected that wind speeds will be higher at hub height than at ground level, the ambient noise levels measured at Project Area receptors do not show a strong correlation with wind speed. High ambient noise levels were found to occur at times when wind speeds were relatively low (refer to Figure 15 of the DEIS Noise Study). In these times, the turbine noise would be less than the ambient. Thus, while wind shear could contribute toward situations where turbine noise is louder than ambient noise, there is no clear pattern for such situations, and the comparison of overall ambient noise levels to maximum turbine noise levels is a valid approach for considering overall noise impacts.

Complaints from Nighttime Periods

SEQRA requires examination of reasonably foreseeable impacts. The comment raises the possibility of conditions during nighttime hours that could result in turbine noise exceeding ambient levels by more than 6 dB due to low overall ambient levels and wind shear creating relatively high noise output from the turbines, and therefore generating higher levels of complaints. While such conditions are possible, their potential to create annoyance is mitigated by the fact that such conditions would be most likely to occur at night, when people are indoors and outdoor noise is attenuated by 15 dB or more. Experience in nearby towns indicates that such conditions, if they occur, will not result in significant numbers of complaints. The history of complaints received at the High Sheldon Wind Farm is discussed in FEIS Section 6.5.5.

Use of Background Sounds in NYSDEC Guidelines

The comments in submittal 342 assume erroneously that the NYSDEC 6 dB criteria should be applied to background sound levels and that they should be applied to specific time periods at night and not to overall ambient levels. As discussed in Section 6.20.7, ambient noise is different from background noise, and the NYSDEC guidelines discuss use of ambient noise when applying the 6 dB criteria.

6.20.26 Sheldon Post-Construction Noise (291)

Provide supporting data to show that measured post-construction noise levels in Sheldon confirm the calculated noise levels (CADNA software calculations of post-construction noise levels). (Submittal 291 – Stantec)

Response: Data from post-construction noise monitoring at the High Sheldon Wind Farm is summarized in FEIS Section 4.18. The full report on the Sheldon post-construction noise survey is provided in FEIS Appendix **Error! Reference source not found.**.

6.20.27 Predicted vs. Actual Noise Levels (342)

Much could be said again about the flaws in computer modeling of sound in complex situations but that evidence has been previously submitted. The arguments are academic and not something that most non-engineers would care to review. Therefore, the easiest way to establish that wind turbine models underestimate sounds at properties adjacent wind utilities is to look at existing wind projects like those in Cohocton, Dutch Hill, Bliss, Varysburg, and the many others in western New York. All were granted permits based on sound studies claiming high background sound levels, discussions of how wind noise masks turbine noise, and wind turbine sound models estimating levels in the mid 40 dBA to above 50 dBA range at the nearest properties. Note how close the parallel is to what Invenergy has presented for the wind utility under consideration for Orangeville. Now, what has happened at those locations? The promises of compatibility with existing community sound levels, of no potential for nighttime sleep disturbance or low frequency vibrations have been replaced with numerous complaints about noise and health to the local Boards. In some cases this has escalated to threats of litigation.

Given that track record, it is a safe assumption to consider the Invenergy models to be estimates of turbine noise under optimum operating conditions and nothing more.

It should be of great significance to those who wish to be fair and impartial in making decisions that affect the public and its health that many of the complaints this author has been asked to evaluate for residents and local governments including wind utilities operating or proposed in New York and other states, Canada, the U.K. and places as remote as New Zealand are all directly related to noise resulting from operation of turbines during conditions excluded from the lEC test results.

It is also worth noting that in locations where the principle of not increasing the pre-existing background sound levels by 6 dBA are applied using the background sound levels in the mid 20 dBA to low 30 dBA range are seldom reported as having complaints. (See right column of April 1, 2010 Background noise study earlier in this report for Orangeville's limits.)

Has Invenergy in its reports, presentations, studies and recommendations to the various Boards and committee discussed these negatives in an open manner or have they focused on defending themselves when these issues have arisen through public questions? Have they disclosed that

there are operating wind utilities, possibly even some of their own, where complaints or lawsuits have been lodged?

Thus, this caution is offered. If the data submitted by Invenergy has created the impression with local officials and others that there will be no future problems from noise they should consider that these same assertions were made to other government officials tasked with deciding on whether or not to issue permits. The local government officials of areas affected by Invenergy's plans for a wind utility are in the same place where the officials of other communities once stood. Those other officials, or their successors, are now facing complaints and threats of litigation from the people living in their wind utility's footprint. (Submittal 342 – E-Coustic Solutions)

Response: The comment does not provide concrete evidence useable in evaluating the Project. Additionally, the commenter ignores the post-construction ability of the Town to enforce its standards.

The model used for the Stony Creek DEIS and FEIS Noise Studies is the same model that was used for the pre-construction estimates at Sheldon. The model was prepared by a firm with significant experience in community noise impacts, including impacts from wind farms. As discussed in FEIS Section 4.18, post-construction noise measurements at Sheldon validate this model and, in fact, show that the model may over predict turbine noise emissions by 1 dBA or more.

Experience at other wind farms, including questions about potential litigation, is discussed in FEIS Sections 6.20.19, 6.20.26, and 6.20.28.

6.20.28 Litigation at Other Wind Farms (374)

I can tell you people in Sheldon all on French Road that will tell you about the complaints of the noise. They are probably in litigation. That's why you don't hear about it. (Submittal 374 – Orr, Cathi (verbal))

Response: Sheldon complaints are discussed in Section 6.5. No lawsuits have been filed regarding complaints at the Sheldon project.

6.20.29 50 dBA Limit (026, 042, 067, 090, 159, 186, 209, 273, 230, 246, 254, 370, 374)

Who came up with 50 dBA? People did not choose to live in a rural setting and expect that they would have to listen to industrial noise 24/7. Noise levels in rural settings such as Orangeville are usually measured between 20 to 35 dBA. It is my understanding that Invenergy's (Report No. 409) that was completed by Acentech Incorporated listed more than 190 homes in Orangeville that could experience sound levels of 42 DBA or greater.

Does this meet NYSDEC guidelines for these identified homes? It only takes an increase of 6 dBA to double the noise level. How will the wind company and the Town of Orangeville mitigate the large number of anticipated complaints? Will turbines be shut down during sleeping hours?

Complaints are being received in neighboring towns for noise issues. What has been done in Sheldon to deal with neighbors complaints? Please specify what has been done to date in Sheldon in regards to noise complaints.

There is no money value to the solitude we currently experience in Orangeville,50 dBA is ridiculous! (Submittals 026 – Raab, Sherri; 042 – Flynn, Billy; 067 – Hopkins, Mary Jo; 090 – Burgio, Helene; 159 – Dickinson, Mary; 186 – Librock, John; 209 – Makson, Paul; 273 – Liber….., Vince; 230 – Nevinger, Mary; 246 – Nevinger, James; 254 – Nevinger, James)

Response: As reported in the NYSDEC Noise Guidance, the EPA's "Protective Noise Levels" guidance found that an ambient level of Ldn 55 dBA (equivalent to Leq 48 dBA for daytime and nighttime hours) was sufficient as a goal to protect public health and welfare with an adequate margin of safety, and in most cases, did not create an annoyance. 50 dBA residential noise limits have been used in several towns where wind turbines are operating successfully, e.g., Wethersfield in Wyoming County, NY and Clinton in Clinton Co., NY. The Town's law has been upheld by the New York courts, as have similar statutes.

Contrary to the statement in the comment, ambient noise studies documented in the DEIS Noise Study show that actual ambient levels in Orangeville range between 20 and 80 dBA on an Leq, 10 min basis, with overall two-week averages being 48, 55, and 58 dBA at three typical locations. FEIS Sections 6.20.1, 6.20.2, and 6.20.3 discuss ambient sound levels in more detail.

The comment incorrectly states that the NYSDEC guidance of a 6 dB increase is perceived as a doubling of volume. As discussed in FEIS Section 6.20.54, a 6 dB increase is perceived as a volume increase of approximately 50%. Compliance with NYSDEC guidelines is discussed in FEIS Section 6.20.6.

FEIS Section 6.20.31 discusses the number of houses where noise levels could exceed 42 dBA under maximum noise conditions.

Sheldon complaints are discussed in FEIS Section 6.5. Pre-construction noise studies do not support the suggestion that the noise from the turbines will be a significant problem that will generate large numbers of complaints. Complaint management is discussed in FEIS Section 6.5.

6.20.30 Compliance with Town Law Limit of 50 dBA (291)

We concur that the project during operation should be able to achieve the Town of Orangeville L10-50dBA limit based on the modelling provided, except at one receptor (H2015 - about 1000 ft from the nearest turbine) for the GE 1.6xle configuration. Please confirm your calculations and state whether or not the Town's noise limit will be exceeded at this location. (Submittal 291 – Stantec)

Response: H-2015 is a seasonal cabin/residence located on a participating property on Nesbitt Road. As such, the Town noise limit of 50 dBA does not apply to this cabin/residence.

As shown in A.7.g the updated noise analysis estimates maximum Project noise levels will be 50.4 dBA at all this location and 45.3 dBA or less at locations of all Non-Participating residences. Thus the Project is expected to comply with the Town Law noise limit of 50 dBA at all Non-Participating residences.

6.20.31 Noise from 1.6 xle (008, 014, 027, 041, 043, 049, 085, 136, 156, 173, 198, 199, 328, 259, 229, 252, 344)

The 1.6 xle Turbine Layout Table indicates sound levels as high as 51 dBA at residences and indicates that approximately 193 homes in Orangeville could experience sound levels of 42 dBA or greater. This number, as the reports completed by Acentech indicate, actually double the

number of homes / residences that will experience sound levels of 42 dBA or greater. Page 111 of the DEIS indicates that 50 dBA or higher sound levels will be found on property within 1000 feet of a turbine. The noise study should include all non-participating property (at 700 feet) for health and safety reasons. This is a significant issue that has not been thoroughly discussed in the DEIS. The DEIS is incomplete if it does not provide the same data for a 1.6 mw GE turbine as can be found for the 1.5 mw GE turbine. On page 111 the DEIS states that for comparison of sound levels at operating wind farms they used Sheldon Wind Farm with GE 1.5 mw turbines. (Submittals 008 – Humphrey, Peter; 014 – Humphrey, Sally; 027 – Raab, Sherri; 041 – Langenfeld, Nick; 043 – Powers, Brian; 049 – Nevinger, Mary; 085 – Burgio, Helene; 136 – Dickinson, Darryl; 156 – Dickinson, Mary; 173 – Malicki, Richard; 198 – Makson, Paul; 199 – Makson, Paul; 328 – Kaczmarek, Brian; 259 – Moultrup, Steven; 229 – Nevinger, Mary; 252 – Nevinger, James; 344 – Nevinger, Mary (verbal))

Response: The DEIS Noise Study (Table 8) listed 199 houses where maximum project noise levels, with the GE 1.6xle turbine, and winds of 8 m/s or higher, would be 42 dBA or more. Approximately 70 (35%) of these residences are owned by participating owners.

Updated noise analysis results, summarized in FEIS Section 4.2, show that the lower noise emissions of the GE 1.6-100 turbine (compared to the 1.6xle turbine proposed in the DEIS) and adjustments of turbine locations result in lower noise levels than were estimated in the DEIS for the 1.6xle turbine. The number of houses where Project noise levels will exceed 42.0 dBA during maximum noise conditions is now estimated to be 106. Of these, 52 (49%) are on participating properties. (Note that the noise level of 42 dBA has no special significance. It was a value selected in the DEIS to show noise results for a relatively large number of houses.)

As discussed in FEIS Sections 4.2 and 6.20.30, there are no non-participating residences where maximum Project noise levels will exceed 50 dBA. In fact, with the GE 1.6-100 turbine and revised layout, maximum Project noise at non-participating residences are estimated to be less than 46 dBA.

Expected sound levels at property lines can be observed on the sound contour map provided in FEIS Appendix A.7.e.

Concerns with noise are thoroughly addressed in the DEIS and this FEIS.

6.20.32 Downwind Noise (342)

Further, it should be noted that whereas consultants for Invenergy and other wind utility developers have claimed that wind turbine sound emission models of noise in the project footprint represent worst-case conditions, there are many factors that can increase the sounds received at adjacent properties above those predicted. For example, the model's estimates do not consider downwind air turbulence, etc.. Independent studies and IEC 61400-11, Wind Turbine Systems Part 11: Acoustic Noise Measurement Techniques (Appendix A) demonstrate the opposite to be true. ANSI standards for outdoor noise caution that turbulence in the air can increase the downwind sound levels by 6-7 dB or more. These factors are not considered in wind turbine facility models. (Submittal 342 – E-Coustic Solutions)

Response: The DEIS Noise Study used a model that conservatively assumed downwind noise conditions existed at all locations and that estimated upper levels of turbine sound. As discussed in FEIS Section 4.18, post-construction noise modeling in Sheldon has demonstrated the noise model used in the DEIS Noise Study is accurate, including effects such as downwind noise.

6.20.33 Low Frequency Noise (342)

The level of annoyance by noise also increases substantially for low frequency sound, compared to more audible mid-frequency sounds. Sound measured as dBA is biased toward 1,000 Hz, the center of the most audible frequency range of sound pressure. Low frequency sound is in the range below 200 Hz and is more appropriately measured as dBC or using instrumentation that can provide 1/3 octave band resolution of the spectrum sound pressure levels. Sound below 20 Hz, termed infrasound, is generally presumed to not be audible to most people. See Leventhall (2003, pp. 31-37); Minnesota Department of Public Health (2009, p. 10); Kamperman and James (2008, pp. 23-24).

For many years it has been presumed that only infra and low frequency sounds that reached the threshold of audibility for people posed any health risks. Recent research has shown that the human body is more sensitive to infra and low frequency noise and that the organs of balance (vestibular) and cardio-vascular systems respond at levels of sound significantly lower than the thresholds of audibility.

Wind turbine noise includes a significant low-frequency component, including inaudible infrasound. For example, according to the manufacturer, under ideal test conditions at a distance of 200 meters (656 feet), a single 2.5 MW Nordex N80 wind turbine generates 95 decibels at 10 Hz. This at the threshold of human hearing. The Nordex study also showed that sound pressure levels were highest at the blade passage frequency (between 1 and 2 Hz) and dropped off with increasing frequency. Thus, we can expect that below 10Hz sound pressure levels were higher than 95 dB.

Although low frequency sound is considered to be in the less-audible or inaudible range, it is often felt rather than heard. Unlike the A-weighted component, the low-frequency component of wind turbine noise "can penetrate the home's walls and roof with very little low frequency noise reduction". Acoustic modeling for low frequency sound emissions of ten 2.5 MW turbines indicated "that the one mile low frequency results are only 6.3 dB below the 1,000 foot one turbine example."

This makes the infra and low frequency sound emissions from wind turbines a potential problem over an even larger area than the audible sounds, such as, blade swish and other wind turbine noises in the mid to high frequency range. (Submittal 342 – E-Coustic Solutions)

Response: FEIS Sections 6.20.41 and 6.20.42 address vibroacoustic disease and potential effects of wind turbine noise on the vestibular system.

The DEIS Noise Study Table 5 provides octave band data for wind turbine noise emissions, including sound power levels for octave bands centered on 31.5, 63, and 125 Hz – frequencies that are in the range considered to be "low frequency." As shown in Table 5, the low frequency sound levels are less than those of the mid-range frequencies that are heard better by the human ear.

The commenter is correct that low frequency components of sound attenuate less with distance than higher frequency components. But the pre-construction noise model used in the DEIS and the updated noise analysis discussed in FEIS Section 4.2 correctly evaluate all component frequencies of the turbine noise emissions using the attenuation rate appropriate for each frequency component. Thus, the noise levels predicted in the DEIS and FEIS accurately account for all frequency components that could be heard at different distances from the wind turbines.

The DEIS Noise Study also reports ambient low frequency noise in the Project Area that were measured over a two week period in the Project Area. These levels were reported in DEIS Table 20 and are reported below in Table 49 along with expected low frequency noise emissions from the wind turbines.

Table 49. Low Frequency Noise: Ambient Levels and Project Levels

Location	House ID	Distance to Nearest WTG	Ambient Noise, Leq	Project Noise, Leq
Almeter Road (Schabloski Residence, Ambient Location 1)	H-0332	1,301 ft	64 dBC	51.1 dBC
Orangeville Center Road (Tozier Residence, Ambient Location 2)	H-0152	1,057 ft	57 dBC	55.1 dBC
NYS Route 20A (Magee Residence, Ambient Location 3)	H-0209	1,325 ft	65 dBC	52.8 dBC
Krotz Road (Straub Residence, Ambient Location 4)	H-0255	1,429 ft	58 dBC	53.4 dBC
Quakertown Road (typical house located 1,340 ft from a WTG)	H-1185	1,354 ft	Na	53.5 dBC
Buffalo Rd (typical house located 2000 ft from a WTG)	H-0257	1,973 ft	Na	50.6 dBC
Nesbitt Road and Buffalo Road (residence closest to a WTG, participating residence)	H-2015	676 ft	Na	57.9 dBC

Notes:

1. Ambient Noise levels Leq values recorded over a two week time period from July 23, 2009 to August 7, 2009, as presented in Figures 11, 12, 13, and 14 in the DEIS Noise Study.

2. Project noise levels were calculated using Cadna model of the FEIS layout, assuming the WTG sound power levels shown in the Table 48, main transformer sound power level of 102 dBA, and sound power levels of 87 dBA for the pad-mount transformers located at the base of every wind turbines.

3. Leq is the energy average noise level, calculated assuming the distribution of wind speeds shown in Table 9.

As shown in Table 49, the ambient low frequency (dBC) noise levels in the area, without any wind turbines present, varies from 57 dBC to 65 dBC at the four measurement locations. The low frequency (dBC) noise produced by the Project will generally vary with distance from the nearest wind turbine, but as shown in the table is expected to range from a low of 51.1 dBC to a high of 55.1 dBC. The 55.1 dBC value is predicted to occur at a participating residence where the closest turbine is approximately 1,000 ft from the residence. As seen by the data in the table, the range of low frequency (dBC) noise levels from the turbines in similar to, or less than, the ambient low frequency (dBC) noise levels present in the community without any wind turbines operating.

The commenter's statements on 10 Hz sound pressure levels at a distance of 656 ft from a Nordex 2.5 MW turbine are not backed up by sufficient data to be checked for this FEIS. Further, the proposed Project is not planning to use this specific turbine. Low Frequency (dBC) noise levels at the closest residence in the Project in listed in Table 49, and these levels are significantly less than the 95 dB given in the comment for the 10 Hz frequency. Even under maximum noise conditions, the dBC noise level at this point, which is 676 ft from the nearest turbine, is 64.3 dBC which does not approach the 95 dB level in the comment.

6.20.34 Dr. Colby's Credentials, Wind Turbine Syndrome (049, 344, 075, 374)

How will Invenergy and the Town Board mitigate the large number of anticipated complaints. How can you mitigate long term exposure. Nobody knows the potential health effects, and there are some pretty scarey ones presented in Dr. Nina Pierpont's book entitled "Wind Turbine Syndrome". Invenergy uses some of Dr Colby's comments as a basis for no adverse health effects. Dr. Colby was reviewed by the College of Physicians and Surgeons of Ontario. The committee observed that Dr Colby has not conducted clinical research on the subject. His expertise is in medical microbiology and infectious disease, an area quite distinct from audiology or other fields related to the physical impact of wind turbines on human health. The committee reminded Dr. Colby the importance of fully disclosing the extent of his qualifications. There are enough health studies out there, from many sources, many of which have been previously presented to the Town Board, to warrant serious consideration. Why not be more cautious? When your health begins to deteriorate, you realize just how precious it is. (Attachment: Dr. Colby Response, 6 pp.) (Submittal 049 – Nevinger, Mary; 344 – Nevinger, Mary (verbal))

[Note: Submittal 049 included a copy of a six page document on letterhead from the College of Physicians and Surgeons of Ontario that summarized a complaint filed April 27, 2009 by a member of The Chatham-Kent Wind Action Group alleging conflict of interest by Dr. Colby.]

The DEIS used a Dr Colby as an expert in claiming that there are no health concerns. The College of Physicians and Surgeons of Ontario where Dr Colby works has stated that Dr Colby has not CONDUCTED RESEARCH IN THIS FIELD (TURBINE HEALTH CONCERNS. Dr Colby's expertise is in the field of medical microbiology and infectious disease, an area quite distinct from audiology or other fields related to the physical impact of wind turbines on human health. I would therefore request that the DEIS utilize professionals with the correct expertise. (Submittal 075 – Orr, Cathi; 374 – Orr, Cathi (verbal))

Response: Health effects hypothesized by Dr. Nina Pierpont are addressed in DEIS Section 3.6.3. This section of the DEIS reported 2009 conclusions of an expert panel assembled by the American and Canadian Wind Energy Associations and quoted one of the members of the panel, Dr. David Colby, who is the Acting Medical Office of Health in the Municipality of Chatham-Kent, Ontario (a municipality located on the north shore of Lake Erie, near Detroit, and similar in size to a U.S. county). The statements in the DEIS from the panel and Dr. Colby both indicated there is no medical or scientific basis for theories that wind turbines are causing direct health effects.

The comments question the validity of Dr. Colby's conclusions because a group in Ontario that is opposed to wind turbine development filed a complaint against Dr. Colby alleging that he had a conflict of interest and was a paid employee of a wind development company. As described in the document from the College of Physicians and Surgeons of Ontario (CPSO) that was provided with submittal 049, the CPSO reviewed the complaint and found it to be invalid.[119] The CPSO found that Dr. Colby was not an employee of the developer in question and it found that he was not operating with a conflict of interest. But, as the commenter points out, the CPSCO did remind Dr. Colby that his expertise in medical microbiology and infectious disease, not audiology, and he should disclose this area of expertise when advising on the subject of wind turbines, noise, and health impacts. In writing the letter that is quoted in the DEIS, Dr. Colby

[119] The CPSO is a governing body for medical doctors in Ontario. It monitors standards of practice, investigates complaints, and disciplines doctors found guilty of misconduct. Reference: www.CPSO.on.ca

was not reporting his individual conclusions, but was reporting the evaluation of the AWEA/CANWEA panel that consisted of the following seven professionals:[120]

- W. David Colby, M.D specializes in medical microbiology and is a public health officer for the Ontario municipality of Chatham-Ken. He is an associate Professor at University of Western Ontario.
- Robert Dobie, M.D specializes in age-related and noise-induced hearing loss. He is a clinical professor at University of Texas-San Antonio and the University of California – Davis. He has served on the boards and councils of many professional organizations and scholarly journals related to otolaryngology (the branch of medicine involving ear, nose, throat, and head and neck disorders).
- Geoff Leventhall, Ph.D specializes in infrasound and low frequency noise. He has served on several faculties, academic societies, and National and International committees focused on noise and its effects on human health. He is a consultant based in the United Kingdom.
- David M. Lipscomb, Ph.D specializes in audiology, and since 1966 he has been qualified by the courts of law as an expert in Audiology. He was one of the original authors of the noise control policy issued by the US EPA in response to Congressional mandates in the Noise Control Act of 1972. For two decades, he taught at the University of Tennessee in its Department of Audiology and Speech Pathology.
- Robert J. McCunney, M.D specializes in occupational and environmental medicine and he has extensive experience reviewing audiometric tests to evaluate the effect of noise. He is a research scientist at MIT and regularly lectures at the Harvard School of Public Health on "Noise and Health."
- Michael T. Seilo, Ph.D specializes in audiology. He is a professor of Audiology at Western Washington University
- Bo Sondergaard, M.Sc specializes in environmental noise measurements and has spent the last 15 years emphasizing wind turbine noise. He is a senior Consultant at Danish Electronics Light and Acoustics (DELTA).

As seen by the list above, the AWEA / CANWEA panel that was the source of the conclusions stated in the DEIS and repeated by Dr. Colby have a great deal of experience in audiology, community noise, and potential health effects on humans. Thus, the comments in the DEIS are deemed to be a sound reference for judging impacts from the proposed project. It is noted that Dr. Nina Pierpont is a pediatrician, with no stated background in audiology or public health.[121]

Similar studies in both Great Britain and Canada have dismissed Dr. Pierpoint's methods and conclusions. In the British study,[122] one expert's conclusions were:

[120] "Wind Turbine Sound and Health Effects: and Expert Panel Review," prepared for AWEA and CANWEA, by Colby et al, December 2009.

[121] www.windturbinesyndrome.com/author.html

[122] Independent review of the state of knowledge about the alleged health condition known as Wind Turbine Syndrome (WTS), at http://www.bwea.com/pdf/publications/HS_WTS_review.pdf.

- *I do not find Dr Pierpont has either the necessary independence or the relevant competence with regard to scientific approach or epidemiological analysis.*
- *Dr. Pierpont's use of epidemiological and statistical methods is seriously flawed.*
- *Dr Pierpont's conclusions are completely unreliable.*
- *A high-quality epidemiological study should always include a range of experts including epidemiologists and biostatisticians. Dr. Pierpont has attempted to conduct a study, by herself, and without including appropriate experts."*

In that same review, Dr. G. Leventhall, MSc, PhD, FinstP, HonFIOA, who is cited numerous times by commenters to this Project, concluded "Dr Pierpont makes the common mistake of taking a one-dimensional view of sound, considering only frequencies and ignoring the importance of levels."

The Canadian report,[123] issued by the Chief Medical Officer of Health of Ontario, concluded "the scientific evidence available to date does not demonstrate a direct causal link between wind turbine noise and adverse health effects." As to Dr. Pierpont's work, this study found "It should be noted that no conclusions on the health impact of wind turbines can be drawn from Pierpont's work due to methodological limitations including small sample size, lack of exposure data, lack of controls and selection bias."[124]

6.20.35 Mars Hill Study (075, 374)

The Town Board has been presented with Dr Nissenbaum's, medical study on the health effects of persons living within 3400 ft of the Mars Hills project in Arostook Co., State of Maine. He concluded that any regulation that results in placement of a turbine less than a 3500 Ft setback is courting a bad human outcome, regardless of the sound modeling used by the industry. (Submittal 075 – Orr, Cathi; 374 – Orr, Cathi (verbal))

Response: The cited "study" is a non-scientific survey in which Dr. Michael Nissenbaum, a radiologist, surveyed residents at nine homes he selected around the Mars Hill project in Maine. Dr. Nissenbaum himself acknowledges his study was not scientific.[125] This survey has not met the requirements of a peer-reviewed paper.

The studies provided in this FEIS and the DEIS do not support a requirement that turbines be required to be located as far as 3,500 feet from residences.

6.20.36 Setback Recommendations by WHO and Minnesota (075, 374)

The World Health Organization and the Minnesota Department of Health Studies warns about putting people any closer than one and a half miles away from Industrial turbines. The

[123] The Potential Health Impact of Wind Turbines, at http://www.health.gov.on.ca/en/public/publications/ministry_reports/wind_turbine/wind_turbine.pdf.

[124] Id. at 5, §2.1.

[125] "Are Wind Turbines Hazardous to Your Health? Docs Disagree," Seven Days – Vermont's Independent Voice, May 9, 2010, by Andy Bromage, available at www.7dvt.com.

Orangeville Town Board is considering placing these Industrial -Scale turbines within 700 FT from your property lines despite the potential damage to the Health, Safety and Welfare of the people of Orangeville. (Submittal 075 – Orr, Cathi; 374 – Orr, Cathi (verbal))

Response: The 2000 and 2009 WHO recommendations on community noise are discussed in FEIS Section 6.20.9. These WHO recommendations do not include statements on setbacks for wind turbines.

The Minnesota White Paper, discussed in FEIS Section 6.20.46, does not contain specific recommendations on wind turbine setbacks. In fact, it concludes that local jurisdictions should set their own setbacks to fit the interests of the community.

Setbacks and noise levels at property lines is discussed in FEIS Section 6.20.51.

6.20.37 Turbines in the Desert (075, 374)

In touring the Southwestern US this March my husband Bob and myself found that Wind Power facilities in Oklahoma, San Juan (Grady), New Mexico, Holbrook Texas and Arizona are placed in remote dessert-like uninhabited areas such as is seen in the pictures I have brought here tonight. There are no homes to be seen for miles and miles from those industrial facilities. . I just came back from Arizona, Oklahoma, Texas and the wind farms there have no people within ten miles. What is wrong with you putting them in our houses? I do have pictures in the car if you want to see them.

The failure of the Orangeville Town Board to act with responsibility is equivalent to abandoning its duty to protect Orangeville citizens leaving them with little or no option but to seek remedy and redress through the courts and the people that are standing up here that are defending the wind turbines all have contracts. I want to hear from somebody that doesn't have a contract say they like wind turbines. (Submittal 075 – Orr, Cathi; 374 – Orr, Cathi (verbal))

Response: Comment noted. Setbacks are addressed in multiple sections of the DEIS and FEIS. The Orangeville Town Board is acting responsibly to assess potential impacts and benefits of the proposed project for the town as a whole. The members of the Town Board evaluating the project do not have any conflicts of interest.

6.20.38 Vibrations (337)

Project will create health issues for neighbors as documented in other wind turbine setting studies. Project will accept vibration, low frequency sound waves, higher frequency sound decibel increases greater than healthful. (Submittal 337 – Ramsey, Gerald and Donna)

Response: As discussed in DEIS Section 3.6.3, expert panels have reviewed the question of potential health effects from wind turbines and have concluded:

- There is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects.

- The ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans.[126]

Low frequency noise is discussed in FEIS Section 6.20.33. Sound from wind turbines is a broad band "white noise" and not one that will include relatively high volumes of high frequency components.

6.20.39 Heart Condition (200)

I bring this to your attention [potential noise excursions greater than 50 dBA that could be allowed by a noise limit based on L10] because in February 2010, my husband had a heart procedure done at Buffalo General Hospital. His surgeon and cardiologist each realize that although no cause can be identified for his condition, stress can be and is a major contributing factor. Initially the stress from the heavy industrial traffic on Krotz Road and servicing area for the site preparation and then the building of the pads, the erecting of the wind turbines and later the stress from sleepless nights and days filled with excessive noise will each be a contributing factor to my husband's further cardiac episodes. We do not want to be prisoners on our own property or prisoners in our own home. We want to continue to be able to access the outdoors and enjoy the land we have chosen to remain on after our children have left. (Submittal 200 – Makson, Paul and Linda)

Response: The proposed project was not under construction prior to February 2010, and thus noise from the Project has not contributed toward the condition described in the comment.

The evidence in the DEIS and FEIS indicate that the project will not create a nuisance nor cause health impacts to residents in the Project Area.

6.20.40 Noise Excursions Allowed by L10 (200)

Acoustical sound engineer Richard James wrote to the board in May 2009 "The current proposed criteria of L10, of 50 dBA would allow sound levels of 70, 80, 90 or even 100 dBA for over one hour per night, if we assume that night time hours are from 8 PM to 7 AM. This is the primary basis for my earlier statement that the proposed criteria of LIO not exceeding 50 dBA has no basis in science; and why that criteria would introduce a major risk to the public's health and welfare...This goes beyond 'noise pollution' to be unsafe, unhealthy and would clearly be a form of torture if it was done to prisoners." (Submittal 200 – Makson, Paul and Linda)

Response: Comments from Mr. James are addressed in several sections in this FEIS. The quote given in submittal 200, appears to be from a submittal Mr. James made prior to issuance of the DEIS. It presumably refers to the Zoning Code of the Town of Orangeville which limits noise from a wind turbine to L10-50 dBA.

It is correct that use of the L10 statistic does allow for high volume sounds to occur in 10% of the time over a given measurement period. The risk of the proposed Project creating such high volume noise excursions is low to non-existent, as wind turbines create a relatively steady noise and not high volume infrequent loud noises. The noise studies in the DEIS modeled the turbines as if they were operating at their loudest noise emission level.

[126] "Wind Turbine Sound and Health Effects: and Expert Panel Review," prepared for AWEA and CANWEA, by Colby et al, December 2009.

6.20.41 Vibroacoustic Disease (060, 200, 340, 358)

Professional expert research has established that chronic exposure to low frequency sound leads to abnormal growth of collagen and elastin in the blood vessels, cardiac structures, trachea, lungs and kidneys of humans and animals. More recent literature suggests that wind farms may be a source of such sound. (Submittal 060 – Makson, Linda; 358 – Makson, Linda (verbal), Submittal 200 – Makson, Paul and Linda)

Response: Submittals 60, 358, and 200 do not provide specific citations on the "professional expert research" or "more recent literature." Presumably these submittals are referring to the "Vibroacoustic disease (VAD)" condition that was defined by Portuguese researcher Castelo Branco. VAD was first identified in airplane technicians, military pilots, and disc jockeys that were exposed to high levels of large pressure amplitude and low frequency sound for 10 years or more. The AWEA/CANWEA expert panel report provides an expert review of the possibility of VAD affecting people that live near wind turbines.[127] This report finds that the likelihood of VAD from wind turbines is very low for several reasons, including the fact that "there is an enormous decibel difference between the sound exposure of aircraft technicians and the sound exposure of people who live near wind turbines." See also the Study from Ontario Canada discussed in FEIS Section 6.20.34.

6.20.42 Annoyance, Vestibular System Impacts (340)

In addition, it is important to distinguish recent studies that link low frequency noise impacts to impairment of the vestibular system or other organs, from well-established findings that wind farm noise is a cause of annoyance and sleeplessness, and the health effects of annoyance and chronic sleeplessness. CSOO's primary concern is with health problems associated with annoyance and sleeplessness. (Submittal 340 – Abraham, Gary)

Response: The quote from submittal 340 does not provide a specific reference to the "recent studies," but presumably it refers to the 2009 book on "Wind Turbine Syndrome" being sold by Dr. Nina Pierpont. In her description of Wind Turbine Syndrome, Pierpont postulates that low levels of airborne infrasound directly affect the body's vestibular system and other internal organs.[128]

The AWEA/CANWEA expert panel report provides an expert review of the Wind Turbine Syndrome and how wind turbine noise (or infrasound) could affect the vestibular system and other organs.[129] This report evaluates Pierpont's basic hypotheses and concludes that "there is no credible scientific evidence that low levels of wind turbine sound at 1 to 2 Hz will directly affect the vestibular system." It also finds that low level sounds from outside the body are not significant enough to impact internal organs. In fact, it points out that vibrations from the body itself (heart beats) will override any resonance for sounds that are less than 80 dB.[130]

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[127] "Wind Turbine Sound and Health Effects: and Expert Panel Review," prepared for AWEA and CANWEA, by Colby et al, December 2009.

[128] The vestibular system is a part of the inner ear auditory system that contributes toward our balance and spatial orientation.

[129] "Wind Turbine Sound and Health Effects: and Expert Panel Review," prepared for AWEA and CANWEA, by Colby et al, December 2009.

[130] AWEA/CANWEA Expert Panel report, page 4-9.

The possibility of the wind turbines affecting nighttime sleeping are best addressed by the WHO guidelines that are discussed in FEIS Section 6.20.9.

As discussed in the AWEA/CANWEA expert panel report, the symptoms of wind turbine syndrome (and the manner in which they were solicited from people known to be bothered by the presence of wind turbines) do not suggest a direct health effect caused by the wind turbines, but possibly are due to stress in individuals that are annoyed by very low sound levels. The studies in the DEIS and FEIS indicate that sound levels from the proposed project are below the levels that are commonly used to minimize annoyance. Further, the sound levels expected for this project are similar to those found at the High Sheldon Project, where community acceptance has been high.

Other studies have similarly concluded Dr. Pierpont's work is unreliable, see FEIS Section 6.20.34.

6.20.43 Negative Impact on Residences in the DEIS (060, 200, 358)

Although wind energy has a role to play in the renewable energy sector, when industrial wind turbines are sited too close to people's homes, the noise, flicker, etc pollution has dire consequences on those who live nearby as you know. Invenergy's DEIS report states that in the turbines proposed for Orangeville, "Invenergy will be using the 1.6 xle turbines with a dBA as high as 51 dBA". As you are aware, the rural character of Orangeville has a dBA of approximately 25 dBA. Additionally, the DEIS indicates that about 193 homes in Orangeville will be negatively impacted by this increase in noise. It is with great sorrow that I realize that we will be one of those 193 homes, being literally surrounded by the industrial turbines. (Submittal 060 – Makson, Linda; 358 – Makson, Linda (verbal))

I urge you to reconsider the location and type of the wind turbines in Orangeville. I am not against wind turbines but I am against erecting any of them less then a mile from my home or anyone's home or in any residential area. The World Health Organization suggests that wind turbines be no less then one and a half miles minimally but ideally two miles from a residence. If the proposed placement of the turbines in Orangeville continues my home will be less then a mile from several of the proposed industrial turbines. I am not ready to put my husband's health nor any of my family, to the test, are you? It is with further sorrow that I must inform you that if you continue with your plans to erect the turbines so close to my home, thus endangering our health, we will be left with no other recourse but to seek legal counsel. (Submittal 200 – Makson, Paul and Linda)

Response: As discussed in FEIS Section 6.20.36, the WHO guidelines on community noise do not provide setback recommendations for wind turbines. FEIS Section 6.20.5 and 6.20.7 discuss the ambient noise in the Project Area, which, on a week-average Leq basis, is higher than 25 dBA. FEIS Section 6.20.30 discusses the number of houses listed in the DEIS sound study. This list gave all houses where maximum expected sound levels from the turbines would be 42 dBA and greater. This level was selected to limit the size of the list provided in the DEIS noise study and should not be considered a level above which the impact is judged to be negative.

6.20.44 Pacemakers (303)

Without purposely questing people on their personal health matters, I know of three family members with pacemakers. There is ample evidence that people relying on pacemakers should avoid remaining in proximity to wind turbines in operation.

Am I to suggest they should stay away from Orangeville? What of the folks ignorant of the potential effects on their health in this area if we construct the wind farm? Yes, not everyone will suffer poor health due to proximity to a wind farm, but what percentage of population do you accept as collateral damage? Specifically, who would you be willing to toss under the wind turbine bus? Some people will be sensitive receptors and will require additional protections, we just won't know who they are and what their problems are until after the project is complete and operational. (Submittal 303 – Ramsey, Donna)

Response: The commenter does not provide evidence regarding pacemakers and wind turbines.

There are currently no studies known to the Lead Agency on the effect of WTG on personal medical devices. No known effects have been determined from the presence of pacemakers near cell towers or across microwave transmission paths. As with any commercial electrician, personnel working on an active WTG will be required to check with their physicians regarding personal medical devices prior to working on the WTG.

6.20.45 Carhart Notch (376)

I know what it's like living around turbines and a lot of my complaints are at night. It's not visual. I have a condition called Carhart Notch. I can hear these things from Beck Road in Attica. I can call my wife from Batavia and tell her, hey, they are not on, are they? It scares me. I'm not making this up. I can do it. I don't know I can do it, but that's a long ways away. You know, Beck Road is way over there. These things aren't quiet. I used to wake up at night and it drives me crazy. I'd drive around town for hours trying to find out what's wrong with me. And it just scares me. I don't think it's funny. I just hope that the placement of these things and the shadow flicker, you really look at it because there is a big difference between north, south, east and west and when it's blowing over your house at night, I hope you're happy what you're going to get, what you are getting paid for. (Submittal 376 – Fugle, Joseph (verbal))

Response: The two locations from which the commenter states he can hear turbine noise are significant distances from the nearest turbines in Sheldon: Beck Road in Attica is approximately 7 miles away, and Batavia is approximately 18 miles away.[131]

Carhart notch is a term used to describe a decreased ability to hear relatively mid to high frequency sounds (typically 500 Hz to 4,000 Hz). The Carhart notch is seen in people suffering from otosclerosis, which is a hearing condition that is estimated to effect 1% of U.S. white population.[132] If the commenter suffers from such a hearing condition, it would appear it would make him less able to hear mid and high frequency components of sounds from wind turbines.

The sound studies in the DEIS and FEIS provide reasonable assessments of the noise impacts of the proposed project for the large majority of the population.

[131] Distances are given between the locations sited and the nearest turbines in Sheldon, and are approximated on lines measured "as the crow flies."

[132] University of Texas Medical Branch, Department of Otolaryngology, "Otosclerosis", by Alan L. Cowan, MD, available at http://www.utmb.edu/otoref/grnds/GrndsIndex.htmlIndex.htmlOctober 18, 2006, page 2 and page 7.

6.20.46 Minnesota White Paper (303)

I strongly suggest you review the Minnesota Department of Health Study, May 22, 2009, and reconsider the minimal suggested distances you propose of the turbines to our residences and properties. (Submittal 303 – Ramsey, Donna)

Response: The cited document by the Minnesota Department of Health is a white paper that contains quotes from a range of different documents but does not include any original research.[133] The final recommendation of the report is:

> "Any noise criteria beyond current state standards used for placement of wind turbines should reflect priorities and attitudes of the community."

The Minnesota White Paper was considered by the Town Board previously as part of its consideration of the local law. That paper supports the decisions of the Town Board. The DEIS and FEIS have carefully evaluated the potential impacts from the proposed project and developed appropriate mitigations where warranted.

6.20.47 Post Construction Monitoring (339)

Will they monitor the decibels regularly to make sure they do not go above 51 decibels? If so, who will do the monitoring? Invenergy or the Town? (Submittal 339 – Fugle, Joseph and Cheryl)

Invenergy once told us when we called to complain regarding the noise level that there was no way to measure the decibels. If there is no way to measure, how will you know if they are in compliance with the law? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: As required by the zoning code for the Town of Orangeville, Stony Creek will perform a post-construction noise study to show that the Project is operating within the applicable noise limits. A proposed protocol for such a study is provided in FEIS Appendix A.3.b. As proposed in the protocol in FEIS Appendix A.3.b, the post-construction noise study will be performed by a third party professional with experience in community noise.

Contrary to the claim of Submittal 339, methods exist for measuring the total noise in an environment. A challenge exists in separating the turbine noise from the total noise measured. The turbine noise is the noise that is regulated by the Town Law.

6.20.48 Domestic Violence (339)

Can you do a study on how megahertz affects domestic violence to see if there is an increase after the High Sheldon Wind Farm went on line? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: The DEIS and FEIS address the plausible impacts of the proposed project, including potential impacts to public safety. Increases in instances of domestic violence are not a likely impact from the proposed Project.

[133] Public Health Impacts of Wind Turbines, prepared by Minnesota Department of Health, Environmental Health Division, prepared in response to a request from the Minnesota Department of Commerce Office of Energy Security; May 22, 2009.

6.20.49 Ability of People to Adjust (072, 372, 369)

I also want to discuss the more subjective topics of sound and visual aspects. Sound in many ways is more subjective than sight. I grew up on the curve on rte. 63 in Peoria, Covington. When my parents bought the house 40 years ago, trucks used the main highway similar to 20A today. Presently, ¼ of a million trucks use the 63 corridor from the thruway to 390. You could put a wind turbine on top of my house, and I'm not going to hear it and I believe like my parents did - many people will adjust to the sound without even realizing it. (Submittal 072 – Beagle, Jill; 372 – Beagle, Jill (verbal))

With regards to the noise bothering people, if that were true, I mean to the extent that I've heard that it's true, pretty much everybody in the financial district in New York City and midtown Manhattan would be a raving lunatic because that place is real noise. Believe me, I've been there. (Submittal 369 – Kinney, Kevin (verbal))

Response: Comments noted.

6.20.50 Sheldon Noise Hardly Noticeable (077)

The noise levels in Sheldon are hardly noticeable. (Submittal 077 – Compton, Philip)

Response: Comment noted.

6.20.51 Noise at Property Lines (019, 100. 148, 150, 213, 235, 265, 272)

The Town of Orangeville adopted a new zoning code in 2009 that included regulations on the siting construction and operation of wind energy facilities. The zoning code indicates that there is no limitation on uses of non-participating adjoining property within the setbacks.

Invenergy's DEIS completely omits all adverse affects of wind turbines on adjoining property within the setbacks. The DEIS should show sound levels, flicker affect, ice throw, etc. for property that can be as close as 700 feet from a wind turbine or even closer for participating property and roadways. This data is necessary to show if limitations do exist for property within the setbacks as common sense would dictate. This is an important health and safety issue for the residents of Orangeville. Simply put, what will sound levels be at property lines? This should be included in the DEIS. No wind turbine or group of wind turbines should be located so as to cause wind turbine sound emission at any location on non-participating property containing a residence in excess of sound levels recommended by NYSDEC and/or as the attached table of property line noise emissions limits indicate (page 2). (Submittals 019 – Raab, Sherri; 100 – Dylag, M.; 148 – Dickinson, Darryl; 150 – Dickinson, Mary; 172 – Malicki, Richard; 213 – Makson, Paul; 265 – Moultrup, Steven and Colleen; 272 – Accardi, Marge; 235 – Nevinger, Mary; 248 – Nevinger, James) [Submittals include as an attachment a: web article quoting Rick James and George Kamperman, 5 pages long.]

Response: Issues of shadow flicker and ice shedding are addressed in DEIS Sections 3.7 and 3.14.

DEC Noise Compliance

Compliance with DEIS Noise Guidelines is discussed in FEIS Sections 6.20.6 and 6.20.24. NYS NYSDEC Noise Guidelines do not specify whether its noise recommendations should be applied at a residence or at a property line. Instead, the NYSDEC guidance contains a discussion that

"appropriate [noise] receptor locations may be either the property line or at the location of use or inhabitance on adjacent property." Because in the Project Area the main activities on adjacent properties occur at the residence, setting noise receptors to be non-participating residences is consistent with NYSDEC guidance and appropriate.

Rick James Noise Criteria

The table referenced by submittals 019, 100, and others is a table by Rick James that lists his recommended criteria for maximum noise levels that should be allowed from wind turbines. The criteria it suggests include:

- Criterion A. In the James' table, this is written as "Laeq = La90 + 5". This criterion suggests the A-weighted Leq turbine noise emissions at a non-participating property should never be more than the ambient L90 as measured during the quietest time period found, either day or night, and not including any of the ambient sound that exists from wind. Implementation of this criterion would result in a limit applied all hours of the year that was based on the quietest, no noise period that could occur in the middle of the night. If period was found where the L90 was 20 dBA, then the turbine noise at a non-participating property line would be limited to 25 dBA for all hours of the year. For typical wind turbines, this would require a setback of approximately 2.5 miles from all non-participating properties. If this criterion were applied to the main economic activity in the Town and primary source of noise - agriculture – virtually every farm would have to shut down.
- Criterion B. James's table lists this as "Maximum immission", "35 LAeq". This criterion suggests the A-weighted Leq turbine emissions at non-participating property lines should not be more than 35 dBA. For typical wind turbines, this would require a setback of approximately 1 mile from all non-participating properties.

The criteria presented by Mr. James would result in excessive setbacks from property lines that would make a project unviable, with little benefit in public safety. The evidence submitted by Mr. James does not support his assertions. The property line setbacks in the town law will provide appropriate levels of protection to town residents and property owners.

It is noted that Rick James suggested noise limits for wind turbines are lower than the ambient noise levels existing in the town. Conversely, the town's noise criteria represent a reasonable goal of minimizing the noise impacts of the wind turbines, which appears to differ from the goals of Mr. James and the commenters, which would attempt to ensure wind turbines could rarely be heard anywhere on non-participant's property, if at all.

Basis for Property Line Setbacks

Town law has set a property line setback based on concerns of public safety at property lines, and not based on noise levels. As discussed in the DEIS, the property line setback requirement provides appropriate public safety from potential ice shedding and the remote chance of turbine collapse.

This policy reflects the goals of the town to support rural land uses and to not necessarily preserve all current open spaces for potential future residential development. This is a land use decision by the town that is consistent with its comprehensive plan; it is not a decision based on noise impacts.

Noise Levels at Non-Participating Property Lines

FEIS AppendixA.7.e is a map of maximum turbine noise levels at all locations in the Project Area. Study of this map shows typical maximum noise levels at the property line setback distance of 700 ft. At a distance of 700 feet from a group of turbines (for example west of T-28 near Bantam Road), maximum turbine sound levels are 47 to 49 dBA. Level at other locations could be slightly higher due to the configuration of multiple wind turbines near the property line.

6.20.52 1.24-Mile Setback (049, 344)

Kapennan and James, independent American noise control engineers, recommend 1.24 miles minimum setback from homes to protect the health of the community. The Town Board should insist on these minimum setbacks as well. (Submittal 049 – Nevinger, Mary; 344 – Nevinger, Mary (verbal))

Response: Kapperman and James are not trained in the areas of health, and their assertions as to health impacts are unsupported. FEIS Section 6.20.34 discusses potential health impacts from the proposed Project. As discussed in DEIS Sections 3.14 (Public Safety) and 3.15 (Blasting and Seismic), the minimum setback distances used for the Project are appropriately large to maintain public safety.

6.20.53 Refrigerator Noise Level (191)

Roughly five years ago, my family was approached about living within an industrial wind facility. I really didn't know what to think at the time. However, the wind sales rep that came to my house and told me half truths and lies did put my mind to rest on one issue. NOISE! He informed me these 400' plus structures made the sound of a refrigerator. Coming from a wind rep, I figured it must be at least that - and then some. I'm just an average person who likes to put things in an average perspective. I personally built my beautiful 3 bedroom home in the country to get away from the hustle and bustle. I enjoy the peace and quiet that I bought into. I did not buy into living next to a refrigerator nor 400' plus tall moving industrial structures. I do not sleep in my kitchen, nor do I have intentions to. Do any of you sleep with your refrigerator? (Submittal 191 – Sahrle, Gerald)

Response: Comment noted. The DEIS Noise Study estimates noise levels from the proposed project under maximum noise conditions. Perceived noise levels are discussed in Section 6.20.54.

6.20.54 Perceived Noise Levels (335)

The Noise study gives all sorts of technical data, but does not seem to comment on the magnitude of perceived noise level increases. According to the maps, there are residences that will experience sustained noise levels at 40 or 50 decibels that, at normal occupancy times (mornings and evening, weekends) have little to no noise besides nature. Leaves rustling are typically considered to be around 10 decibels.

As with many things, increases in the perception of noise is not linear, meaning that a noise that goes from 20 decibels to 30 decibels is not half again louder, it is actually perceived to be twice as loud. Something that increases by 20 decibels is typically perceived to be 4 times as loud.

The noise study should be updated to convey the perceived increased noise levels. The report should also be amended to discuss the perceived noise level increases to typical noise levels, not just the average. An example would be the perceived noise level increases for families enjoying a

campfire in the evening when there is only rustling leaves or frogs in the background, or bird watchers and people sitting outside at night enjoying the quite nights. These are all important things that people and families of the Town enjoy. They should be addressed along with average levels. The report should also address ways to mitigate these issues. There is no mention of ways to mitigate the impacts or alternatives to the proposed Industrial Turbines. Please revise this report to show how relocating, removing turbines from the project or using smaller turbines could and would mitigate impacts to residences. (Submittal 335 – Anonymous)

Response: This comment raises the valid subject of perceived loudness, but it makes inaccurate statements about ambient sound levels, and it also inappropriately compares ambient sound levels from the quietest times to the sound levels that would occur when wind turbines are operating at maximum noise levels.

First, the noise levels in the DEIS Noise Study are for maximum wind operation, which occurs when wind speeds are 14 mph and higher at ground level (Refer to DEIS Table 22). They are not noise levels that are expected to be sustained noise levels for all hours of the year. FEIS Sections 6.20.9 and 6.20.24 discuss percentages of time that the maximum noise levels are expected to occur.

Ambient sound levels in the project area were measured and are discussed in the DEIS Noise Study and in FEIS Sections 6.20.1, 6.20.2, 6.20.3, and 6.20.6. At some distance, the noise from rustling leaves alone might be only 10 dBA, but the ambient sound study demonstrates that at typical receptors in the Project Area, the ambient levels are much higher than 10 dBA, even at times when the only likely sound sources are from "nature." For instance, Figure 8 of the DEIS Noise Study shows ambient background sounds at the quietest receptor studied. At this point, even during the quietest instant, the background (L90) sound level was about 20 dBA, and at most times, the minimum background noise level was about 40 dBA.

The perceived loudness of the turbines would vary depending on the turbines output level and the ambient condition to which the turbine sound was being compared. On average, the NYSDEC sound guidelines recommend that annoyance will be minimized if noises are not more than 6 dB more than ambient levels. A 6 dB increase translates into a perceived volume that is 50% louder than the ambient. (The relationship between the dB scale and human perceptions of loudness are based on experiments that find that people perceive a 10 dB increase as being a doubling of sound).

Noise mitigation is addressed in FEIS Section 6.20.57.

6.20.55 Construction Noise (291)

Construction noise contours are not of sufficient detail (only shows 2 levels) to make a judgment on potential adverse effect. Please revise accordingly: (i) Only average daytime levels are assessed, which suggest that there could be periods of peak activity, or short-term noise levels,that could be intrusive, especially activities like pile driving and near sensitive receptors like schools. (ii)Night-time construction should not be permitted. (Submittal 291 – Stantec)

Response: Finer grain noise contours are not available for construction noise, but the existing contours are sufficient given that this map is a conservatively loud estimate of noise levels for construction in that it assumes construction occurring simultaneously at every turbine site. Table 50 lists the equipment that was assumed to be operating at every turbine location in the DEIS construction noise model.

Table 50. Equipment Assumed at Every WTG Location in the DEIS Noise Model

Equipment	Noise Level at 1,000 ft
Truck	49 dBA
Dozer	54 dBA
Excavator	55 dBA

The sound pressure levels shown in Table 50 are continuous sound levels determined from actual field measurements of noise from construction equipment at a distance of 50 feet away with reductions for distance determined using the methodology outlined in the ESEERCO report referenced at the bottom of DEIS Table 21.[134]

The construction noise estimates in the DEIS construction noise model does not include impulsive noises from sources such as blasting or pile driving. However, such activities are not expected to be required. Table 3 of the DEIS Noise Study reports the maximum sound levels from these activities at a distance of 1,000 feet. These are 65 dBA for blasting and 64 dBA for pile driving. Neither of these activities are expected to occur, and thus the noise levels in the DEIS construction noise model are conservative estimates of the construction noise most likely to occur in the daytime during Project construction.

Nighttime construction activities are discussed in Section 6.20.56.

6.20.56 Nighttime Crane Noise (291)

Is night-time noise due to operation of the main crane considered? (Submittal 291 – Stantec)

Response: This comment has been made based on the statement in DEIS Section 3.6 that as mitigation to nighttime construction noise impacts, construction activities could be limited "to relatively quiet activities, such as welding and installing equipment, cabling, and instrumentation."

Since submittal of the DEIS, Stony Creek has re-evaluated the benefit of being able to perform different construction activities at night and has concluded there may be a need to perform crane assembly and turbine erection during nighttime hours. Turbine erection requires use of the valuable "topping crane" that is not able to work during periods of high wind. To maximize efficient use of this crane and to help complete construction in as short a time as practicable, it is necessary to perform turbine erections whenever winds are low enough to allow crane operation – even if such conditions occur at night.

Also, because of limitations walking the topping crane from site to site, multiple "tear downs" and reassemblies of the topping crane are necessary. To minimize the length of construction period, these tear downs and reassemblies are often performed during the nighttime hours while turbine erection crews are sleeping.

Both of these activities – turbine erection and topping crane teardown and re-assembly are performed at turbine sites, and will therefore be located one quarter mile or more from non-participating residences. Equipment required to tear down and re-assemble the topping crane is mostly smaller cranes and trucks to drive disassembled crane parts from one site to another. Equipment required for turbine erection is the topping crane, smaller cranes, and electric generators used to power lights at the turbine assembly site. Both of these activities were performed successfully and without incident or complaint at the High Sheldon Wind Farm.

[134] ESEERCO Power Plant Construction Noise Guide, BBN Report No. 3321, May 1977.

Orangeville Town Zoning Section 1116.C.2.d specifies that:

> The construction of wind energy conversion farms shall be limited to the hours of 7:00 a.m. to 7:00 p.m., except for certain activities that require cooler temperatures than possible during the day, subject to approval from the Town Board.

To minimize the time during which the Project is under construction, Stony Creek is requesting the Town Board issue a special use permit to Stony Creek with a condition that allows construction activities at night provided they are necessary to safely complete the particular installation or do not create a disturbance.

6.20.57 Noise Mitigation (049, 068, 339, 344, 370)

The noise, people talking about noise – noise is a big issue. My company that I work for does sound attenuation around airports. I understand it's louder. Just giving you an idea, FAA spends millions and millions of dollars every year to go in and soundproof people's houses to reduce the noise levels. So sound is an issue and I'd like that addressed. If there are areas that's going to be above the recommended value, I'd like to see a study done of what's going to be done to address the noise issues, how to mediate it, to get it down to the normal levels. (Submittal 370 – Daniel, Eric (verbal))

What are the consequences of any noise above 51 decibels? In other words if turbine noise reaches higher than 51 decibels, what will the town do about it? (Submittal 339 – Fugle, Joseph and Cheryl)

What about those affected by noise? Will Invenergy be making all these homes soundproof or maybe they will buy ear plugs for everyone? This is ridiculous. Did it ever occur to you that this project does not belong in Orangeville. Money is not everything! (Submittal 068 – Hopkins, Mary Jo)

Response: Comparisons to noise from the proposed wind turbines and an airport are inappropriate because the magnitude of the sounds from these two sources is dramatically different.

As discussed in FEIS Section 6.20.29, pre-construction noise models show that turbine noise levels should not exceed the 50 dBA at year-round residences on non-participating properties. And as discussed in FEIS Section 6.20.27, the models used to predict turbine noise levels have been shown to be accurate and slightly conservative in that they predict noise levels higher than actual. Therefore, it is reasonable to assume that turbine noise levels will not exceed town law requirements and no mitigation will be required.

To verify noise limits are being met, Stony Creek will perform post-construction noise monitoring to ensure turbine noise levels are in compliance with expected levels. If a resident believes turbine noise levels exceed allowable at his or her residence, they will be encouraged to follow the complaint resolution plan discussed in FEIS Section 6.5.

6.20.58 Residual Effects Fund (339)

Will you set up a fund in place for future residual effects from the turbines? What will you do if 10 years down the road the Town and Invenergy is found liable for harming the people of Orangeville? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: Studies in the DEIS and FEIS do not indicate that the Project will harm the people of Orangeville. Nonetheless if adherence to the complaint resolution plan is made condition of zoning permits issued to the Project, Stony Creek will be required to continue to implement the complaint resolution plan and to comply with all permit conditions as long as the Project is in operation. As such, Stony Creek will be financially incentivized to resolve complaints and to have funds available to correct any issues, should any occur.

6.21 Shadow Flicker

6.21.1 Number of Homes Affected (068, 337)

Has it occurred to the Town of Orangeville board members that over 75% of the homes in Orangeville will be affected by shadow flicker according to the front page article titled Orangeville Wind Farm Hearing Set, dated March 24th? And you answer is that Invenergy will buy window shades for these people!! (Submittal 068 – Hopkins, Mary Jo)

Project will accept flicker. (Submittal 337 – Ramsey, Gerald and Donna)

Response: The statement that 75% of the homes in Orangeville will be affected by shadow flicker is incorrect. The DEIS and this FEIS both have included shadow flicker analyses, and both show that there will be no no-participating residences experiencing 30 hours or more of shadow flicker per year. FEIS Section 4.17 reports results of an updated shadow assessment performed using the latest information in the FEIS.

Shadows will occur at non-participating residences, but the number of houses affected is much different than stated in the comment and the number of hours per year that shadows are expected to occur is very low. FEIS Table 5 lists the number of houses where shadows could occur. As shown in this table, the total number of houses where shadows could occur, at all, is 156 houses, or approximately 25% of the houses in Orangeville. Many of these houses are owned by participating landowners, and the impacts at these houses are minimal: at most of the houses where shadows could occur, the shadow hours will total between 2 and 10 hours per year.

6.21.2 Epilepsy (370)

One of the questions I'll have in this DEIS addressed is I'd like to see a study of flicker from the wind turbines done. I live in Warsaw or Orangeville. I drive to Buffalo every day and I can honestly say I've drive in there for almost 12 year now. There's a turbine on top of Buffalo Hill. When I come around there some days the sun is right, it scares the daylights out of me. And with family members that have epilepsy, I request that a study be done of how flicker will affect the residents, what houses it will effect because that's a big thing if anybody has ever seen anybody have a seizure. (Submittal 370 – Daniel, Eric (verbal))

Response: The risk of the Project causing seizures for people subject to photosensitive epilepsy is addressed in DEIS Section 3.7. As discussed in the DEIS, the rotation of the wind turbines is five times too slow to cause a seizure, thus there is effectively no risk that shadows from the turbines will cause seizures.

6.21.3 Turbine Relocations to Minimize Shadow Flicker (335)

The shadow flicker study, while it states that the object is to determine the impacts and how to try to minimize any impact, it only states the impacts and areas that will be affected. In regards mitigations, it only says that there really isn't much that can be done. Please revise this report to show how relocating or removing turbines from the project could and would mitigate impacts to residences. Also please revise the report to address the effects of shadow effects on residences and travelers that are prone to epileptic seizures. And what will be done to mitigate (and

remove) this effect from residences who have family members with epilepsy. (Submittal 335 – Anonymous)

Response: FEIS Section 6.21.2 addresses the potential for wind turbine shadow flicker to cause epileptic seizures. Since the DEIS was published, Stony Creek has reassessed the likelihood of shadow flicker affecting nearby residences and has adjusted turbine locations so that expected annual shadow flicker hours are under 30 hours per year at all non-participating residences. Based upon the minimal nature of this impact, further relocation of turbines is not warranted.

6.21.4 Blinds as Mitigation (339)

Does Invenergy really think that installing blinds and trees helps shadow flicker? Do they realize that the only way that would work is if you duct tape the blinds closed? Has anyone from Invenergy, other than Sheldon residents, ever experienced shadow flicker inside a home for more than 30 minutes? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: As discussed in FEIS Section 6.21.1, relatively few houses are expected to experience shadows from the wind turbines, and expected annual shadow hours are relatively low at most of the non-participating houses where shadows could occur (one the order of 2-10 hours per year). For few residences where shadows do occur and they are an annoyance to the resident, installation of blinds, curtains, shutters, and landscape plantings are effective tools for mitigating shadows.

6.21.5 Shadow Flicker on Exchange Street (339)

Will I have any shadow flicker at my residence at 1750 Exchange Street Road Attica? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: FEIS Appendix A.8.a is a map of expected shadow hours in the Project Area. The closest turbine to 1750 Exchange Street Road in Attica is T-1 which is over 1 mile away. No shadow flicker is expected to occur at this location.

6.22 Visual Resources

6.22.1 Scale of Turbines (334)

Scale of the turbines is excessive and inappropriate. I was present during budget reviews of the Department of Energy's (DOE) wind program during the mid-l990s in Washington, DC. At that time, the Wind Program of the Office of Utility Technologies proposed a Research and Development (R&D) program for the design, construction and testing of very large wind turbines - as it shifted away from a more balanced approach that included smaller residential- and commercial-scale wind turbines. The purpose for focusing the R&D budget on large machines was specifically to capture the large wind resource found in the windiest states.

Randy Steer, a budget examiner at the Office of Management and Budget questioned the DOE about appropriateness of size land scale, and asked who would want such large turbines if they were developed. Representatives of the DOE wind program responded that the industrial-scale large machines were intended for remote areas typified by the Dakotas, Kansas, parts of Texas, etc.

The industrial-scale wind turbines proposed for this project were not intended for populated areas such as Western New York. Their proposed use in this DEIS represents a "bait and switch" tactic on the American taxpayer fueled by the profit motive of big business. (Submittal 334 – Bassett, David)

Response: The size of the proposed turbines is similar to the size of utility-scale turbines installed in recent years at many other wind farms in numerous states across the country, including in New York. The size of turbines anticipated by government officials approximately 15 years ago is an issue outside the scope of this SEQRA review, and does not reflect current Agency policy. The Department of Energy (DOE) supports wind projects through its Wind Powering America Initiative; as on the DOE website:

> "Wind Powering America is a commitment to dramatically increase the use of wind energy in the United States. Through its state Wind Working Groups, programs at the National Renewable Energy Laboratory, and partnerships, this initiative will establish new sources of income for American farmers, Native Americans, and other rural landowners and meet the growing demand for clean sources of electricity. "[135]

The DOE specifically states "Through Wind Powering America, the United States will achieve targeted regional economic development, enhance our power generation options, protect the local environment, and increase our energy and national security."[136].

6.22.2 Object to Views of Turbines (069, 131, 333, 334)

When we purchased our land almost 25 years ago one of the most important factors was the beautiful scenery and view along with the peace and quiet. This eventually led us to build our home here 17 years ago. Everyone who has stopped at our home commented on the beautiful

[135] USDOE Wind Powering America website at http://www.windpoweringamerica.gov/wpa_about.asp.

[136] *Id.*

view we had. That was until the industrial wind turbines were erected in the Town of Sheldon. Now I have to view them every day and every night. I don't know if they are more hideous during the day or at night when you are subjected to the constant flashing of red lights. If Orangeville goes ahead and erects industrial wind turbines you the Town Board will have totally destroyed the very reasons I moved here. (Submittal 131 – Jensen, Kathleen)

Page xxxv - Because of the heavy incidence of wind turbines in this portion of Wyoming County, some impacts may even be less than for stand-alone facilities. For example, wind farms are a common sight in this area, thus the negative aspects of the visual impact are limited as the local skyline already includes numerous similar intrusions. This reasoning is circular. A pristine skyline is violated. The violation becomes an excuse for further violation. If the DEIS seeks to convince the Town Board and interested citizens, it should rely on a more substantive line of argument. (Submittal 334 – Bassett, David)

I have heard over and over again that some people consider the 400 foot Invenergy wind turbine majestic and beautiful. There are also those who find the 400 foot Invenergy turbine absolutely disgusting and a total obliteration of our beautiful hillsides in the Town of Orangeville. It is totally unfair to those of us that have the opinion that the erection of turbines in our town will totally destroy the awesome aesthetic quality of our living environment. Red blinking lights in place of our black star filled skies. (Submittal 069 – Hopkins, Mary Jo)

No famous landscape artist has even, or would ever, include a wind turbine in her/his beautiful paintings of the American rural countryside. Search any museum of art or the web and you will perhaps find quaint Dutch windmills near a canal or lake, but industrial turbines have never adorned the photographs or painting of men and women noted for their skill in grasping the essence and beauty of any rural scene.

Wind turbines are alien, ugly structures which mar the beauty of rural Western New York. They might be aesthetically pleasing near an industrial complex, on the shores of a large lake or ocean or the banks of a river near a steel mill or manufacturing facility.

The DEIS indicates that turbines are a common sight and predicts most people, over time, will become used to them. Contrary to that position, most people abhor the appearance and will never, never "get used" to them. People live in Orangeville because these horrible looking alien structures are not present. A silo is quaint as can be seen in many artists and photographer's rendering of a bucolic scene. A silo may be 50 to 100 feet tall. Not a 400 feet tall mass of silver or gray steel. Nobody "gets used" to ugliness. Travelers passing through Wyoming County may find them amusing or entertaining but don't have to look at them permanently. However, just ask anyone who travels from Orangeville and points east to Erie County and those monstrosities in Sheldon are ever annoying and ruin the beautiful sight of rolling hills, pastures and woods. Even at night, those flashing red lights, all in unison, seem to warn of the reality of the horror of the science fiction movies of the 50s.

Many people who now live in, or own property in Orangeville came here from urban areas to abandon the ugliness of the cities for green space in abundance. They invested money in the area to build homes or to simply have a camper or cabin to get away from industrialization for a weekend or a lifetime. They never anticipated that the ugliness of industry would come to them

in such a beautiful area. Their investment in peace and quiet and beauty would be ruined both financially and aesthetically.

Not one person has indicated that the sight of wind turbines is "pleasing". Only those who are making money might be pleased with the sight and only because it signifies money in their pocket; like the sight of a bank book or stock certificate. Certainly not "pleasing" like the sight of: the birth of a healthy calf, a new mown hay field, a field full of tasseled corn, a grove of apple trees in bloom in spring, the gentle rolling hills of green maples, oak and ash in the summer or the golden leaves of autumn.

Wyoming County is noted for its beautiful scenery in the various village parks, state parks and county forest preserves. It is dotted with ponds, streams and creeks. Letchworth Park is a jewel to which many tourists come annually. Silver Lake attracts thousands – whether it is to relax for a week or two or to attend fishing contests. Wind turbines should not be allowed to deface that invaluable beautify for the sake of a few dollars. (Submittal 333 – Dieger-Lamlight, Carolyn)

Response: Comments noted. DEIS Section 3.8 and DEIS Appendix F address the impact to aesthetics in the area near the wind turbines. The analysis was completed using industry standard methods, and concluded that approximately 69.9 percent of the VRA study area (all areas within 7 miles of turbines) will likely have no visibility of any wind turbines (as viewed at the apex of blade rotation) due to intervening landform or vegetation. As discussed in FEIS Section 4.2, an updated study was performed for the 1.6-100 turbine and layout proposed in the FEIS. The comparative results are summarized in FEIS Table 7. In particular, the VRA analysis for the FEIS shows that:

- At 20.2% of the area 11+ turbines could be visible;
- At 17.2% of the area 16+ turbines could be visible;
- At 12.2% of the area 26+ turbines could be visible; and
- At 8.3% of the area 36+ turbines could be visible.

The statistics above assume a turbine is visible if any one part of the turbine is visible. Also, these statistics assume clear weather conditions.

The effect of this visibility is subjective; views of the wind turbines will be objectionable to some individuals and not to others (see for example comments in submittals 072, 372, 077, 352, and 369). This effect will be considered fully and appropriately by the lead agency in the decision on whether or not to grant permits for the Project.

6.22.3 Like the Views of Turbines (072, 372, 077)

The visual aspect is also difficult for the town members and the board to quantify. Unlike sound though, I can specifically give you reasons for our love of the wind turbine landscape. I purchase over $1M in electric a year through my job. When I look at a wind turbine, I see the future development of energy sources and jobs in NY State, and a reduced dependency to natural gas and natural disasters. New York, unlike other states, who depend on coal, generates a majority of our electric using natural gas turbines. With our stricter clean air laws, coal turbines are limited to existing units and as these get old, they are decommissioned, not replaced. This causes some of the highest utility costs in the Nation and a loss of jobs. It also leaves us very vulnerable to natural disasters such as hurricanes. Electric costs 3x today's price when Katrina hit New Orleans. Wind turbines may be a drop in the electric generation bucket, however, I think of

IBM and the computer of 40 years ago, when IBM built a unit the size of a room to do addition, today we do applications on our phone. Can you imagine what the future holds for wind turbines? (Submittal 072 – Beagle, Jill; 372 – Beagle, Jill (verbal))

The only thing I have found to be a negative factor is the looks of them (you either love them or hate them). Personally I like them as they represent open spaces to me. (Submittal 077 – Compton, Philip)

Response: Comments noted. As discussed in FEIS Section 6.22.2, the effect of this visibility is subjective; views of the wind turbines will be objectionable to some individuals and not to others (including the commenters here). This effect will be considered fully and appropriately by the lead agency in the decision on whether or not to grant permits for the Project.

6.22.4 People Adapt to Turbine Views (352, 369)

Where would we be if back in the day people decided that they don't like the visual impact of an oil well? Or more recently, a cell phone tower. Do the wind mills look a bit out of place? Yea, they do. But myself, I hardly even notice them. Visitors who come to see me and they don't come very often, thank God, but they notice them. I've recently come back from New Zealand. My daughter lives there. They have wind turbines. They also have geothermal. A team producing plant is quite an impressive sight. There's a visual impact for you. And one third of the electricity that's produced in Holland or more properly the Netherlands I, in fact, wind turbine. As a retired teacher, we have got to ensure that things are right for our children. And this visual impact thing, I mean I've seen uglier things around here and everywhere else than, you k now, these wind mills. (Submittal 369 – Kinney, Kevin (verbal))

As the surrounding wind projects have demonstrated and after the Stony Creek Wind Project is constructed and operating, bovines, equines and humans will see these structures as part of the landscape much as we view the electric and telephone poles constructed some 60 years ago. (Submittal 352 – Ahl, Joe (verbal))

Response: Comments noted. As discussed in FEIS Section 6.22.2, the effect of this visibility is subjective; views of the wind turbines will be objectionable to some individuals and not to others (including the commenters here). This effect will be considered fully and appropriately by the lead agency in the decision on whether or not to grant permits for the Project.

6.22.5 Smaller Turbines (335)

The visual impact study states that its intent is to assess the impacts of the proposed project and determine efforts to mitigate or reduce the visual impacts of the project. While it mentions that there will be negative impacts to the area's aesthetics, it only states that there is little that can be done to minimize the impacts due to the size of the proposed structures. It does not give alternatives to mitigate the impacts of the project. There is no mention of the use of smaller turbines, different types of turbines, or anything else. This study should be updated to included alternatives that would reduce the impact of installing and Industrial object in a scenic, rural setting. (Submittal 335 – Anonymous)

Response: The Visual Resource Assessment (DEIS Appendix F) was conducted using industry standard methods to visual impacts. These methods are described in detail DEIS Appendix F, pages 1 and 2 and elsewhere in the document.

DEIS Alternative 4 proposed use of turbines which are smaller in size. The analysis revealed certain tradeoffs. Ground disturbance associated with use of smaller turbines would essentially be identical to that associated with the Preferred Alternative. Use of smaller turbines would result in significantly less revenue for local governments and schools (about $430,000 less per year), and the effect to visual resources associated with use of the smaller turbines was not substantially different than the effects of the Preferred Alternative.

6.22.6 Centerline Road Photo Simulation (065, 074, 291, 367, 375)

I also asked the Town, in my January 4, 2010 DEIS scoping comments, to conduct a visual impact analysis at the intersection of Centerline and Orangeville Center Roads, looking west. One will see more than twenty turbines in Sheldon, less than 7 miles to the west. Add to that view another seven turbines (T-32, 33, 34, 35, 36, 37 & 38) less than 1 mile west from this intersection and the visual impact is devastating to the former scenic beauty. Since the Town did not conduct independent studies or visual impacts of these Industrial Wind Turbines, did not create Wind Turbine district overlays, did not respond to the Wyoming County Planning Board's comments on visual impacts, and did not modify its scoping to include this location, it appears that you do not intend to comply with stated goals in the Town's Comprehensive Plan and to respond to reasonable requests from residents.. Quite simply, it is becoming apparent that you do not care. I would ask you one more time to do the proper visual assessment from the intersection of Centerline and Orangeville Center Roads, looking west, and tell me how the cumulative visual impacts of this project comply with the standards of the Comprehensive Plan, Zoning Law, and SEQRA. You all seem to be hell bent on jamming this project in, at the expense of residents who live in Orangeville because of its natural beauty and scenic vistas. Apparently, the money generated by this project takes priority over people's property rights. Please do the right thing and expand the DEIS to include this visual assessment. (Submittal 065 – Humphrey, Peter; 367 – Humphrey, Peter (verbal))

I want to know when the visual impact study for the intersection of Centerline Road and Orangeville Center Road will be completed and available for public review? (Submittal 131 – Jensen, Kathleen)

An additional photo simulation should be performed at the intersection of Orangeville Center and Centerline Roads looking west toward WTGs T 32-38 and the existing WTGs in Sheldon. (Submittal 291 – Stantec)

[Pertaining to Cumulative Effects Assessment] See comment regarding additional photo simulation in Section 3.8.5. (Submittal 291 – Stantec)

I've not been able to read all the 1,396 pages of documents from Invenergy yet, but the Noise and Visual Impacts will without a doubt change my quality of life. Most if not all of the turbines in the Stony Creek Project area along with the O&M building and substation will be easily visible from our property, as will the flashing red lights at night. I have previously asked for visual impact study from her. (Submittal 074 – Wilkenson, Nyla; 375 – Wilkinson, Nyla (verbal))

Response: FEIS Appendix A.8.d contains a new simulation of the proposed Project as viewed from the intersection of Orangeville Center and Centerline Roads and looking west.

Note that the photo simulation in FEIS Appendix A.8.d is prepared from a point approximately 500 to 1,000 feet west of the exact intersection of Orangeville Center and Centerline Roads.

This location was selected because it gave a view that demonstrated the maximum visual impact from this area around the location. If the simulation was done at the exact center of the intersection, the Sheldon turbines would be slightly less visible and there would be considerably more objects in the foreground including a stop sign, several electric power poles, and a snow fence. A simulation from the intersection center would certainly be a representative view, but the town had chosen to use a simulation that shows impacts greater than what would be present at the intersection center.

6.22.7 Photo Simulations from Hilltops (110, 111, 112, 113, 114, 116, 118)

Why were all viewshed results conducted down in Warsaw, Johnsonburg, and Attica. None were done from hilltops in Attica, Warsaw or Middlebury where people live and would be affected. (Submittals 110 – Donohue, James; 111 – Malark, Michael; 112 – Kibletz, Christopher; 113 – Carrick, George; 114 – Snyder, Allen; 116 – Dusterhus, Matthew; 118 – Piazza, Richards)

Response: The 11 photo simulations in the DEIS were performed from locations that represent views from a range of distances from the wind turbines (near, middle, and long distance) and view from different receptor types (number of viewers, viewer type, view duration and frequency, land use).

Six (6) of the 11 photo simulations are from hilltops in low density areas:

- View from Receptor 7 (Hilltop in Middlebury). Figure A2
- View from Receptor 21 (Hilltop in Attica, from Route 238). Figure A3
- View from Receptor 41 (Hilltop in Attica, from Glor Road). Figure A4
- View from Receptor 89 (Hilltop in Wethersfield, from Poplar Tree Road). Figure A8
- View from Receptor 122 (Hilltop in Orangeville, from Route 20A). Figure A11
- View from Receptor 140 (Hilltop in Warsaw, from Route 20A). Figure A12

Five (5) of the 11 photo simulations are from areas of moderate density residential development:

- View from Receptor 51 (Near Orangeville Town Hall, from Route 20A). Figure A5
- View from Receptor 59 (Outside of Varysburg, from Route 20A). Figure A6
- View from Receptor 71 (Outside of Johnsonburg, from Route 98). Figure A7
- View from Receptor 103 (Quakertown Road in Orangeville). Figure A9
- View from Receptor 111 (outside of Gainesville Center, from Route 19). Figure A10

6.22.8 Clear Weather Photo Simulations (132)

I want to know when a visual impact study for the wind turbines which needs to include the following criteria: nighttime and during a clear day will be completed and available for public review? The pictures that were put in the DEIS show mostly cloudy days. Last summer when the pictures were taken was not typical as it rained and was cloudy for most of that time period. (Submittal 132 – Jensen, Paul)

Response: Simulations in the DEIS were performed using photographs taken on November 19, 2009 and December 8, 2009. As seen in the photo simulations, conditions during

these times were clear or partly cloudy skies. While cloudy weather is not uncommon in the Project Area, Stony Creek was careful to ensure that simulations were not done when conditions would result in limited visibility.

Night time visibility is represented by the FAA Light viewshed map that is provided as Figure 3 in the DEIS VRA Report.

6.22.9 Backup for Statement in DEIS Executive Summary on Visual Impacts (334)

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

- *Page xxvii – based on the DEC Visual Policy, it is reasonable to conclude that simple visibility of the proposed wind farm from any of the affected resources of statewide significance does not imply detrimental effect on the perceived beauty of the place or structure; nor will the Project necessarily cause the diminishment of public enjoyment and appreciation of what inventoried resources or impair the character or quality of such a place. (Submittal 334 – Bassett, David)*

There are many [more] examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

Response: The subject statement was prepared by a firm experienced in performing objective assessments of visual impacts in accordance with the guidelines of NYSDEC. The policy acknowledges that the simple visibility of a new element, in this case wind turbines, does not necessarily create a detrimental impact. The level to which visibility of a new item is detrimental is assessed by considering the importance of distant views in the given resource. The statement correctly notes that the views are not necessarily the key to the value for the subject resources, and therefore simple visibility of the project may not be detrimental to the resource. The commenter's disagreement or agreement with the statement and the NYSDEC methodology does not change the validity of the statement.

6.23 Public Roads

6.23.1 Road Bond (007, 023, 040, 056, 099, 125, 134, 165, 170, 183, 215, 309, 315)

A similar [to decommissioning] bond should also be made to cover damage to roads, during installation and maintenance. (Submittals 007 – Humphrey, Peter; 023 – Raab, Sherri; 040 – Maxwell, Ann Marie; 056 – Karasiewicz, Nancy; 099 – Dylag, M.; 125 – Orlowski, Joseph; 134 – Dickinson, Darryl; 165 – Dickinson, Mary; 170 – Malicki, Alice; 183 – Librock, John; 215 – Makson, Paul; 309 – Davis, Barbara; 315 – Wilkinson, Nyla)

Response: Stony Creek will enter into a road agreement with the Town of Orangeville that will require Stony Creek to inspect and document the condition of Town roads prior to construction, to leave the roads in a condition equal to or better than their condition prior to the start of construction, and to post financial security that the Town can use to complete road repairs in the unlikely event that Stony Creek does not maintain or repair the roads as required by the road agreement.

6.23.2 Snyder Road (132, 291)

I am also concerned with the reckless plan to bring these turbines down Snyder Road. The bridge across Stony Creek can only be considered a lane and a half wide and has a weight restriction. It seems that none of this matters as long as Invenergy can get those industrial turbines to their site. (Submittal 132 – Jensen, Paul)

Include Snyder Road in table 3-3 of Appendix L. (Submittal 291 – Stantec)

Include discussion of Snyder Road bridge/culvert weight limit (from Appendix L) in FEIS text. (Submittal 291 – Stantec)

Response: Comment noted. Snyder Road is a Town road that the DEIS Road Study showed could be used as a transportation route to deliver components to turbines T-1, T-2, and T03. The Town has posted a 14-ton weight limit for the Snyder Road bridge/culvert over Stony Brook Creek.

Prior to commencement of Project construction, Stony Creek will review with the Orangeville Highway Superintendent the roads to be used for Project construction and the ability of these roads, including bridges and culverts, to withstand the expected loads and traffic. As part of this review, Stony Creek will review the bridge on Snyder Road. If Stony Creek and the Town Highway Superintendent determine that the Bridge on Snyder Road is unable to support expected construction traffic, then Stony Creek will either (i) reroute traffic to avoid the Snyder Road bridge (using roads already identified), (ii) reinforce the Synder Road Bridge, or (iii) use a temporary bridge to cross Snyder Road. All road restoration and impact minimization strategies apply to each alternative, including the SWPPP plans to address erosion and stormwater impacts.

Table 3-3 of DEIS Appendix L inadvertently did not include Snyder Road in the list of roads that could be impacted by Project construction.

Table 51 is an updated version of Appendix L Table 3-3 that does include Snyder Road.

Table 51. Updated List of Local Roads that Could be Impacted by Project Construction

Route	Jurisdiction	Lanes/ Width	Material	Shoulder Width	Rating
U. S. Route 20A	State	2/20-22’	paved	8’	good/fair
NYS Route 98	State	2/20’	paved	6-8’	fair
NYS Route 238	State	2/20’	paved	6’	good
Almeter CR 48	County	2/20’	paved	4’ gravel	fair
Almeter*	Town	2/20’	paved	4’ gravel	fair
Buffalo	Town	2/20’	paved	4-5’ gravel	fair/poor
Centerline	Town	2/20’	paved	4’ treated	fair
Hermitage CR 4	County	2/22’	paved	2’ paved/4’ gravel	excellent
Krotz	Town	2/16’	paved	4’ gravel	poor
Nesbitt	Town	2/18’	paved	4’ gravel	poor
Orangeville Ctr. Rd. CR 20	County	2/20’	paved	4’ gravel	fair
Orangeville Ctr. Rd. CR 36	County	2/20	paved	4’ gravel	fair
Quakertown Rd CR 20	County	2/20’	paved	6’ gravel	fair
Syler	Town	2/20’	paved	4’ gravel	fair
Snyder Road	Town	2/20’	paved	4’ gravel	fair

*Almeter Road is a County Highway from Weber Road to Orangeville Center Road.

6.23.3 Transformer Delivery Truck (291)

Include requirements for the truck delivering the substation transformer (weight, turning radius, grade (including vertical curve limits), width, height, route) in Table 32 and discussion in text. (Submittal 291 – Stantec)

Response: The substation transformer will be the single heaviest load delivered as part of the Project. It will require a special purpose vehicle to deliver the transformer to the site, and it may require special purpose equipment to make final turns and offload the transformer at the pad and containment well that will be pre-constructed for it in the substation. Figure 22 is a photograph of a transformer similar to the one to be used at Stony Creek being delivered to a wind farm substation.

Table 52 is an updated version of DEIS Table 32 that includes the specifications on the typical vehicle used to deliver the main station transformer.

Figure 22. Transformer Delivery Truck

Table 52. Delivery Vehicles for Major Wind Farm Equipment

Component	Length	Height	Gross Vehicle Wt. (lbs)	Clearance Radius on Turns
WTG Nacelle	112’ 10”	14’ 8”	197,000	111’ 3”
WTG Hub	78’ 0”	13’ 8”	75,000	48’ 4”
WTG Blade	161’ 0”	13’ 6”	< 70,000	147’’3”
WTG Tower Base Section	158’ 9”	15’ 5”	212,000	80’ 5”
WTG Tower Mid Section	128’ 2”	15’ 0”	132,000	80’ 5”
WTG Tower Top Section	123’ 7”	14’ 6”	112,000	74’ 6”
Substation Transformer	168’ 0”	15’ 0”	368,800	50’ 0”

Note: The radius shown in the table WTG blade truck is the minimum radius that must be clear of obstructions for the blade delivery truck for the 1.6-100. The rear wheels of this trailer would follow a path with a radius of approximately 116’9”. The road analysis in the DEIS evaluated roads for a radius of 133’0”, a value greater than the tracking radius required for the 1.6-100 wind turbine, thus impacts with the 1.6-100 are expected to be less than was analyzed in the DEIS.

6.23.4 Roads Steeper Than 5 Percent (285)

There is no mention in the zoning detailing restrictions for Town roadways that have slopes greater than 5% during the transportation of turbine and construction materials. Roads that have slopes greater than 5% will be exposed to increased soil compaction, erodability and sediment flows. (Submittal 285 – Geoghegan, Heather)

Response: It is not clear if the commenter is referring to the zoning law or the Project. The comment provides no evidence to support the claim that sections of Town roads with grades of 5 percent or more will experience erosion either on the road or on the sides of the road. All Town roads expected to be used are paved roads. As discussed in FEIS Section 6.23.1, Stony Creek will enter into a road agreement with the Town to ensure roads are returned to a condition equal to or better than before Project construction.

As discussed in DEIS Section 1.4.17 erosion will be mitigated through implementation of a storm water pollution prevention plan (SWPPP).

6.24 Cultural Resources

6.24.1 PSC Evaluation of Impacts to Cultural Resources (341)

Discussion at DEIS pages 132 - 133 regarding archeological resources suggests that although the "Town may separately impose mitigation measures it is not bound by any New York State Historic Preservation Office determination." While this statement may be true, the Town does not have the same responsibilities as other agencies pursuant to relevant requirements of the NY State Parks, Recreation and Historic Preservation Law §14.09 or federal agencies pursuant to §106 of the National Historic Preservation Act. In considering whether to grant a CPCN for construction of the Project, the NYS PSC must make findings and address requirements of §14.09. Until such time as a determination that §14.09 review by the state agencies will be precluded by an on-going §106 review, the developer should address impact minimization and mitigation accordingly. (Submittal 341 – NYS Dept of Public Service)

Response: Comment noted. The DEIS and FEIS contain significant information on potential historic impacts, including documentation of Phase 1B historic and archeological field studies that have been done in the Project Area. The Town is using this information as a basis for its assessment of potential impacts and necessary mitigations. State and federal agencies may use this information or additional information to make their own determinations.

6.24.2 Phase 1B Studies (341)

Appendix G.1 Phase 1A Cultural Resources Assessment – The study of Historic Resources is not complete. Phase 1B study should be provided as part of the FEIS. (Submittal 341 – NYS Dept of Public Service)

Response: Reports documenting Phase 1B field studies on historic and archeological resources in the Project Area are provided in FEIS Appendix A.5.b and FEIS Appendix A.5.c.

6.24.3 Cultural Resource Mitigations (341)

Please explain the direct and indirect measures taken to avoid/minimize or mitigate project impacts on cultural, historic and archeological inventory. (Submittal 341 – NYS Dept of Public Service)

Response: As discussed in FEIS Section 4.14, to check that roads, cables, and turbines were not being installed at sites with archeological artifacts, Stony Creek's consultant PanAmerican performed 2,000 shovel tests at sites that historic maps and land features showed were most likely to contain artifacts. None were found. During construction of the Project, Stony Creek will follow the Plan for Unanticipated Discoveries provided in FEIS Appendix A.5.a. As described in this plan, if during construction Stony Creek or its contractors encounters archeological artifacts, Stony Creek will bring such finds to the attention of the NYS SHPO.

As discussed in FEIS Section 4.13, Stony Creek's consultant PanAmerican surveyed all potentially historic properties located within five miles of the proposed turbines and where turbines might be visible. The only potential impacts to historic resources are visual impacts as no structures or buildings will be demolished or physically altered. Given the nature of the proposed project, direct mitigation measures such as installation of screening or removal of specific turbines will not be effective for the potential impacts. Instead, as mitigation for expected visual impacts, in

accordance with the NYSDEC Policy on Assessing Visual Impacts, Stony Creek will fund improvements to historic resources in the community in an amount up to $1,500 for every MW of installed generating capacity ($141,600 if 94.4 MW are installed). Stony Creek will fund such mitigations within two years after the commencement of commercial operations of the Project.

6.24.4 SHPO Consultation (382)

Per New York State Office of Parks, Recreation, and Historic Preservation the proposed windpark (sic) will have an adverse impact on culture resources within the Area of Potential Impact surveyed. Consequently, the project sponsor must work in consultation with OPRHP to pursue feasible and prudent plans that avoid or mitigate the adverse impacts. The DEIS includes a discussion of cultural resources in the project area and the Area of Potential Effect (APE) for visual impacts to historic resources as well as possible mitigation actions. Please ensure OPRHP is in receipt of your recent work. (Submittal 382 – NYSDEC)

Response: The NYS OPRHP (also referred to as the SHPO) is in receipt of the most recent field studies for the proposed project, including that Phase 1B architectural and archeology field survey reports that are contained in the FEIS Appendix A.5.b and FEIS Appendix A.5.c..

6.25 Electromagnetic Interference

6.25.1 Broadcast Television (009, 029, 054, 084, 171, 228, 243, 275, 307)

On page 139 of the DEIS it states that reception of off-air broadcast television signals can be degraded by the presence of wind turbines in the vicinity of the receiver. Access to cable TV is very limited in Orangeville.

Where the project is found to be causing television reception problems how will Stony Creek rectify the problem so residents will have television reception the same to what it had prior to the Project beginning to operate? How will this reception problem be determined and by who? A timetable must be established for enforcement to prevent the months of problems that have occurred in neighboring towns with wind farms. Also compensation for lost of service should be included. (Attachment: Page 139 DEIS, 1 pp.)

Cable TV is not available in our area of Orangeville. We have had satellite service in the past and find it cost prohibitive on a fixed income. It also has occasional weather related disturbances. We are very happy with our new antenna. Should the presence of wind turbines interfere with our TV reception, will Invenergy mitigate this by paying for an even bigger TV antenna, installed, which may or may not solve the problem. Or would they pay for our satellite service for the lifetime of the turbines 20+ years? Will Invenergy even be in business that long? (Submittals 009 – Humphrey, Sally; 029 – Moroz, Larry; 054 – Hopkins, Harold; 084 – Burgio, Helene; 171 – Malicki, Richard; 307 – Davis, Barbara; 275 – Makson, Paul; 228 – Nevinger, Mary; 243 – Nevinger, James)

Response: Television reception could be affected by the Project, but based on experience at other wind projects, effects on TV reception will be relatively minor and correctable. Reception of off-air television signals (i.e., broadcast TV but not cable or satellite TV) can be altered by the presence of wind turbines between the receiving and transmitting antennae. The extent of the effect will vary on the relative locations of the wind turbines and the antennae. Because each television station has a different transmitting antenna, effects, if any, are typically not common to all television stations and will vary for each receiver site. Effects will vary by station and may not exist at all for many or all stations.

DEIS Appendix H provides results of a television station survey conducted for the Project. The study notes that in the Project Area off-air TV reception is available primarily from the west (Buffalo based stations), but also from the east (Rochester based stations) and the south (Jamestown-based stations).

Orangeville Town law requires the Stony Creek to correct television receptions issues caused by its wind turbines. In the event that the turbines cause a decline in reception quality, Stony Creek will provide alternative reception methods. Residents experiencing degradation of television reception should call the Project complaint line discussed in FEIS Section 6.5.3. When Stony Creek receives a television service complaint, it will hire a local television consultant to visit the residence to evaluate the source of the reception disturbance. If it is determined the disturbance is due to the wind energy facilities, Stony Creek will pay for the consultant to correct the service using a variety of methods, including possibly installing stronger antennas or possibly having basic cable or satellite service installed with annual reimbursements for such service provided to the Owner by Stony Creek.

6.25.2 Satellite Television Interference (345)

And I don't want my satellite messed with. (Submittal 345 – Hopkins, Harold (verbal))

Response: DEIS Section 3.11.2 indicates satellite television (aka "direct broadcast service") is unaffected by wind turbines.

6.25.3 Wireless Communication (293)

For your DEIS investigation I would like you to include all forms of wireless communication. To date there has not been any significant study that has addressed the potential impact on wireless communication with the Town of Orangeville's Wind Turbine Project and also the accumulative impact on the county with regard to wind turbines projects in other towns. (293-Accardi)

Response: The comment is not clear on what form of wireless communication is of concern. The DEIS and this FEIS have addressed all forms of potential electromagnetic interference that were raised in the DEIS Scope.

6.25.4 Ham Radio Interference (293, 294, 295, 337)

Please find enclosed a letter outlining "Amateur Radio Emergency Communication": [Reasons for existence of ham radio]. (Submittal 294 -Accardi)

Please find enclosed a study done at Quartz Hill on RF interference: [Study in New Zealand that concluded that amateur radio stations should be at least several kilometers (possibly >10 km) from nearest turbine. (Submittal 295 - Accardi)

Project will disrupt reception by tv, radio, ham radio operators. (Submittal 337 – Ramsey, Gerald and Donna)

Response: Submittal 294 provides explanation of HAM radio and its uses. Comment noted.

Submittal 295 is a report from an amateur radio club in New Zealand documenting their measurements of low level radio frequencies at wind farm operating on Quartz Hill with Siemens 2.3 MW turbines. Prior to installation of the wind turbines on Quartz Hill the amateur radio club had operated HAM radio station that specialized in detecting low-level, weak radio signals from around the world. The report finds that low level radio energy from the wind turbines interfered with the club's ability to detect the very low radio signals that it previously detected from other parts of the world. The report provided as submittal 295 is consistent with the information in DEIS Section 3.11 which stated the turbines could produce electromagnetic interference that would be picked up by a HAM radio operator. However, the report appears to describe be an unusual HAM radio operation that is trying to sense very low level signals from a range of frequencies from around the world. No information has been provided about specific HAM radio installations in the Project Area, thus it is assumed that a special purpose installation such as the one described in the New Zealand report is not operating in the Project Area.

Interference with TV and radio is also addressed in DEIS Section 3.11 and the Comsearch study provided in the DEIS. No interference to radio transmitters is expected. TV interference is a possible impact and will be mitigated as described in FEIS Section 6.25.1.

6.25.5 CANWEA Guidelines on Radar Interference (296)

Please find a copy of Technical Information and Guidelines used in Canada: Guidelines from CANWEA and RABC) which state:

- *Proposed placement of wind turbines should take into account possible impacts on point-to-point and broadcast radio communication signals.*
- *Proposed turbines should be evaluated for possible impact on Doppler radar. Mitigation measures include use of software that can compensate for the radar "clutter" created by turbines.*
- *Proposed wind turbines should be evaluated for potential impact on air defense radar within 100km and air traffic control. (Comment 296 Accardi)*

Response: The potential impacts raised in the comment are addressed in the DEIS and FEIS:

- Potential impacts to point-to-point communication signals (e.g., radar transmission) are addressed in DEIS Section 3.11.1.
- Potential impacts to broadcast radio are addressed in DEIS Section 3.11.2.
- Potential impacts to Doppler weather radar are addressed in FEIS Section 6.25.6.
- Potential impacts to military radar are addressed in FEIS Section 6.25.7.

6.25.6 Doppler Weather Radar (132, 341)

Executive Summary, Page xxx – please explain the concern of the Department of Commerce (DOC) and how the applicant intends to mitigate the concern. (Submittal 341 – NYS Dept of Public Service)

I want to know when the study concerning the interference by wind turbines with the weather service in Buffalo will be released and available for public review? According to an article in the Buffalo news dated October 2009, the turbines in Sheldon are already causing interference with the weather service. (Submittal 132 – Jensen, Paul)

Response: The DOC letter mentioned in the DEIS executive summary is described in DEIS Section 3.11.3. As stated in the DEIS, the DOC letter stated that the Project could have a moderate impact on NOAA's weather radar WSR-88D located in Buffalo, NY. The issue of interference with this specific radar has occurred at other Wyoming County wind farms and has caused the wind farms to be visible on the weather radar maps as fixed patterns covering a relatively small portion of the overall sweep of the Buffalo radar. The visibility of the Stony Creek Wind Farm on the weather radar would be similar to the visibility of other wind farms on the radar map.

Invenergy has discussed the issue of wind turbine visibility on weather radars with NOAA staff, and NOAA has indicated that its staff is able to manually distinguish between the unchanging patterns of wind turbines on their radars and the passing weather events. Over time it is anticipated that the NOAA will develop methods to filter and screen out wind turbines from their radar systems, as occurs with other types of large structures.

6.25.7 Military Radar Interference (059, 359)

Wind Turbines Present Real Concerns: During Congressional testimony last week, Gen. Gene Renuart, head of NORAD and US Northern Command, told lawmakers, he has "real concerns" about the growing use of wind turbine farms to provide an alternative energy source. "The science in this is that the turbines themselves have a very real effect on the radars," he said, explaining that "they distort radars" and "in many cases block the picture". He maintained that creates risk for aircraft and the nation's defense. Although DOD has been able to get some sites repositioned, some still pose a problem. He said, too, that DOD is forming an executive group to work with the FAA and industry to ensure companies know how to get information about "assessment tolls that developers may use" before "they enter into contracts or expend money that might be put at risk."

From the written testimony:

> *Radar Interference. Comprehensive Air Domain Awareness will not be attained unless we can resolve the growing issue of radar interference. As such, NORAD and USNORTHCOM support the establishment of an interagency process to allow the accurate assessment of existing and future plans for obstructions that potentially disrupt various radars within our area of operations. A formal vetting process is required with the necessary authorities to prevent projects from interfering with the defense of North America while supporting the expansion of alternative energy sources, such as wind farms. To that end, NORAD has taken the initiative to form a radar obstruction evaluation team to quantify the impacts of proposed wind energy projects in close proximity to our radars.*

Radar interference, they are having studies done and they are setting up a group and they are asking wind farms to set up and come forth and have this organization such as Town of Orangeville, could have the energy company for the obstruction, evaluation of the radar and being that Orangeville is so high with their altitude and the relationship to the Buffalo Airport and Niagara Falls, has the Town of Orangeville considered the obstruction of these turbines on the radar? (Submittal 059 – Unknown; 359 – Sahrle, Valary (verbal))

Response: Potential impact to military radar is addressed in DEIS Section 3.11.4. As discussed in the DEIS, Stony Creek has performed initial screening of risk to radar using tools made available by the FAA. This tool shows the risk is moderate, color coded yellow, which means the project could have some impact on military or civilian radar. Other projects, such as the High Sheldon Wind Farm, the Wethersfield Windpark, and the Noble Bliss Windpark operate successfully in this same region with the same "yellow" category or radar risk. A map of the radar risk for the region is provided as Figure 23.

Prior to construction Stony Creek will submit final turbine coordinates and heights to the FAA via Form 7460 - Notices of Proposed Construction. The FAA will review and evaluate potential impacts of the wind turbines to civilian and military radar systems. Stony Creek anticipates that impacts will be minimal, as they are with other wind farms that operate in the region.

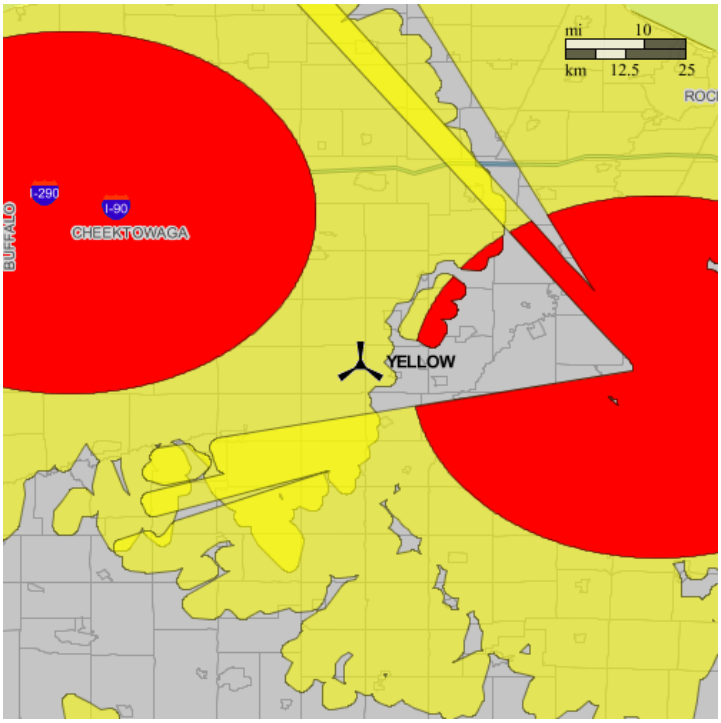

Figure 23. Long Range Radar Map for Western New York

In addition to the specific reviews being performed by Stony Creek, the federal government is taking steps to better understand how radar can operate in conjunction with wind turbines. In early 2010, the Department of Defense engaged Massachusetts Institute of Technology Lincoln Laboratory to conduct a 60-day independent assessment of the impact of wind turbines on long range radar air surveillance capability, with a focus on the proposed wind farm at Shepherds Flat, Oregon. The Lincoln Laboratory team reviewed data, models, and predictive capabilities that had been used by the USAF 84th Radar Evaluation Squadron in previous assessments.[137]

The study found that radar is impacted by clutter due to road traffic, terrain, wind turbines, and other sources such as birds and precipitation. This clutter results in false alarms on the radar display and is only partially mitigated by the system's clutter filtering capability.

However, the study found that the number of false alarms can be reduced by proper adjustment of the radar settings as part of the planned September 2010 optimization to be carried out by the FAA. The study provided specific recommendations for this optimization. The study also found that the overall false target count can be further reduced by modifications to the radar. Adding an auxiliary processor allows the implementation of a more modern, adaptive clutter map that can edit out the false targets.

Massachusetts Institute of Technology Lincoln Laboratory concluded that the changes will be effective in reducing false targets produced by the radar due to wind turbines.

[137] "Wind Turbine Impact Mitigation for QVN ARSR-3 Radar", Massachusetts Institute of Technology Lincoln Laboratory, Executive Summary, June 21, 2010.

6.25.8 Military Pilot Training (337)

Project will create a hazard for military pilots training to fly planes under radar. (Submittal 337 – Ramsey, Gerald and Donna)

Response: No evidence is provided to support the comment. Given that other wind farms in the area operate without reported issues for military pilots, the Stony Creek Wind Farm is not anticipated to present significant hazards to military pilots. The FAA will review potential impacts of the wind turbines to military operations systems as part of its review of the Form 7460 submittals by Stony Creek. Stony Creek anticipates that impacts will be minimal, as they are with other wind farms that operate in the region.

In general, wind turbine farms with windmills greater than 100' in height are charted on airspace maps as obstructions to flight and avoided. This approach was reiterated recently in the DEIS for Powder River Training Complex Ellsworth AFB, South Dakota.[138] This DEIS, dated August 2010, addressed concerns about specific activities including current and anticipated land uses, including wind turbine sites and other tall objects. The proposed facility, the DEIS concluded, would not change the use of public or private land. Any existing or new tall structures, such as wind energy generators or communication towers, would be charted by FAA on sectional aeronautical charts and avoided by aircraft.

[138] http://www.ellsworth.af.mil/prtc.asp

6.26 Socioeconomics

6.26.1 Likes Project's Economic Benefits (078, 079, 131, 339, 351, 378, 352, 356, 362, 365, 370)

Now we have the opportunity having these windmills in the town of Orangeville, We believe they are being offered to us when times our are getting tough especially in our wallets, when the unemployment rate is out of hand and even to the point of people losing their homes. During a time when people are truly struggling the gas company and electric company are raising prices. The difference is this company Invenergy, which offers the windmills will be helping you in you wallet and in your town taxes. (Submittal 078 – Panicali)

I've been a property owner and voter of the Town of Orangeville for the last 34 years with 85 acres of land. I've paid my share of school and town taxes. I finally am able to get an opportunity to see big business come to our township. The Stony Creek wind energy project can make this happen. Especially for us senior citizens so I hope the town board votes for the project to become a reality. (Submittal 079 – Dabek, Jean)

We are very happy to get – in fact, the vast majority of people in Sheldon seem to be quite happy with the project. We are happy to get a tax bill with no town taxes. We are happy to see additional funding going to our volunteer fire departments. We are happy that the wind farm has created jobs for local people like myself. Finally, as someone whose spent many years working on dairy farm, I would like to see our families survive. Farming is the backbone of Wyoming County's economy and the wind farm is a blessing for many of our farmers in Sheldon. Milk prices are very bad right now and the money that landowners have made on the wind farm has helped them ride out these rough patches rather than closing shop and having to subdivide and sell off their land. So from many angles, the wind farm has been a benefit to our community. I hope like the folks in Sheldon that you continue to support wind energy in Orangeville. (Submittal 365 – Kehl, Mary (verbal))

As far as the monetary benefits, there is a lot of monetary benefit to having the wind turbines come in. I'd like to see alternative ways to distribute that. There is a lot of people in this town that do not have say a relatively high assessed property value. Their benefits will realistically not be as much as other people but yet they are going to be made to look at these things like everybody else. (Submittal 370 – Daniel, Eric (verbal))

I just want to clear one thing and that is the money isn't the thing to me. It's not what the comment was about. If the turbines don't come, I'm happy to pay my taxes, town taxes, relatively speaking. It's less than what you pay for your TV, your phone, internet. It's kind of a relatively small thing, but I just wanted to make that clear. (Submittal 378 – Daniel, Eric (verbal))

I know people have difference of opinion, but I think we need to be rational here. We know the opposition's claims are incredibly exaggerated. All we have to do is look next door and in fact, it seems like people in Sheldon, Weathersfield and Eagle are pretty happy with the wind farm and with the tax reduction. I support tax reduction and I support the wind project in Orangeville. (Submittal 351 – Mengs, Marge (verbal))

Tonight I want to show my family's support for the wind project by reiterating some of the benefits the Town can expect. First of all, what other business have a desire to move to rural

Orangeville and propose a project which virtually promises to eliminate and likely exceed the current town tax rate. Every property owner in Orangeville will benefit. A couple of examples of this benefit are as follows. A property in Orangeville assessed at 150K will see a yearly tax savings of about $1,215 or about 333 pennies per day. A property assessed at around $250,000 will see a yearly property tax reduction of about $2,025 or about 550 pennies a day. (Submittal 352 – Ahl, Joe (verbal))

I live on the Quaker Town Road. I am in favor of the wind mills. I've just got a letter here a few weeks ago. My assessment was raised almost $30,000 and if the wind mills will help me a little bit and pay my taxes, I'm all for it. (Submittal 356 – Miscal, Kathy (verbal))

I'm a lifelong resident of Sheldon. I lived in the same house I was born in. I do not work for, I'm not a project participant, nor is my family or extended family part of Invenergy or any other towns wind mill project any place. The only thing I have in common with everybody else in the Town of Sheldon, my town taxes are not at zero. My fire tax this year dropped by 80 percent. (Submittal 362 – Henneberger, Dan (verbal))

Response: Comments noted.

6.26.2 Schools Need Income (072, 372)

One final note, I have always felt that I would promote wind turbines even if there wasn't financial compensation as I feel that strongly about developing future energy. Gary and I have a son in Warsaw school. With the state of the state looking at bankruptcy, we cannot understate the income to our schools. It may be in the very near future that only areas with net incomes survive. (Submittal 072 – Beagle, Jill; 372 – Beagle, Jill (verbal))

Response: Comment noted.

6.26.3 Tax Breaks for Residents Closest to Tubines (339)

Is it fair to have the people that live closest to the turbines receive the same amount of tax relief as someone who can't see or hear them? Is it fair to give tax relief based on home assessment? Someone living within 1500 feet receives $435 a year based on the assessment of their home, while someone living 2 miles away receives $1000 a year based on their assessment. How can that be fair? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: Assessments of properties are governed by New York law. Each homeowner can challenge their assessment if they feel it is inaccurate. Towns cannot allocate funds received except on an equal basis to all.

6.26.4 Tax Reduction, not Tax Elimination (131)

I think you should also make public the true facts regarding the Town taxes Invenergy will be paying. According to their own full page ad in the Attica Pennysaver on October 25, 2009, they state they will only be reducing town taxes and not eliminating as you have led many residents to believe. (Submittal 131 – Jensen, Kathleen)

Response: Stony Creek will pay all Special District taxes (no tax breaks) and also make PILOT and HCA payments. Current and future Town Boards will decide how the funds are used as part of the annual budget process.

6.26.5 Escalation of HCA Payments (132)

Did the Town Board think ahead and ask for a cost of living clause for both the pilot payments and the security instrument for the turbine removal? A cost of living clause should have been one of the first things put into this contract. I didn't see this mentioned in the DEIS so I'm sure that the town board wasn't thinking ahead when they rushed into this plan with Invenergy. (Submittal 132 – Jensen, Paul)

Response: The host agreement proposed by Stony Creek includes inflation adjustments.

6.26.6 Job Creation (061, 352, 360, 361)

My name is Brian Euscher, and I'm the lead technician on the High Sheldon Wind Farm. I live in South Wales with my wife and two daughters. I started working on the Sheldon project in January of 2009. It is my job to manage a crew of six operation and maintenance technicians through all the repairs and the services of the wind turbines. I ensure that everyone has all the equipment, tools and technical information they need to do their jobs properly and safely.

Prior to this job, I worked at a Fortune 500 company in the city of Buffalo for 26 years. Due to the economy the company downsized, and I lost my job. Despite being right in the middle of one of the biggest recessions in the United States, I was able to find a job working on the High Sheldon Wind Farm. My job is full-time and includes health insurance, dental insurance, 401K and technical training programs. It is exciting to work on a cutting edge technology in a growth industry. Now my commute to work is 10 minutes long.

So, my message tonight is that, in addition to the tax reduction, wind farms bring jobs -jobs that can't be over seas. This is a benefit that cannot be overlooked - economy. (Submittal 061 – Euscher, Brian; 360 – Euscher, Brian (verbal))

The Stony Creek Wind Farm operations will also provide for about seven permanent jobs. Jobs that can go to the local people if qualified. This would help reduce the bedroom community affect that seems to be increasing out here in rural Orangeville. (Submittal 352 – Ahl, Joe (verbal))

And as far as the jobs, we have the most industrial wind turbines in New York State and we have one of the highest unemployment rates, so that doesn't correlate. (Submittal 361 – Humphrey, Sally (verbal))

Response: Stony Creek has demonstrated at the High Sheldon Wind Farm their policy to hire local construction and operation personnel, if possible (see Section 6.26.7). Wyoming County does not have one of the highest unemployment rates in New York State. In June 2010, according to the New York State Department of Labor, Wyoming County had a 7.9 percent unemployment rate, and 22 of 52 New York counties had a higher rate. At 8.2 percent, the statewide unemployment rate was higher than Wyoming County's rate.

6.26.7 JEDI Model (340)

Section 1.1.8 of the DEIS, "Economic Benefits," asserts that in addition to direct payments to local taxing jurisdictions of about $740,000 per year, construction related employment and its trickle-down effects will provide substantial economic benefits. This conclusion is based on running the U.S. Department of Energy Job and Economic Development Impact ("JEDI") Model. A critical evaluation of this conclusion should look first to the permanent jobs and economic benefits the project would provide to the community. The DEIS is silent on this topic.

Second, an objective evaluation of the JEDI model can be found in the National Academy of Sciences report on wind power. The Academy found that "[m]odels such as JEDI can improve understanding of the economic impacts of new energy facilities, especially when those impacts are considered at the macro level," but "assessments of the actual economic impacts of wind-energy facilities" provide better information. Despite its experience operating other wind projects in the United States, the DEIS contains no information on actual economic impacts of any wind-energy facilities.

The Academy goes on to recommend the following approach to assessing potential economic benefits:

From the perspective of the local affected area, it may be best to focus on the jobs that will be directly created by the project—what skills they require, what their pay levels are, what their duration will be, and what the company's hiring practices are—as well as on reasonably anticipated effects—positive and negative—on the local economy.

From this perspective, the DEIS also comes up short. The DEIS provides a list of the kinds of jobs that would be created during a two year construction period (and none during the post construction period), most of which involve specialty skills that are likely to be brought in from outside the area.

Similarly, maintenance of wind turbines once installed are generally assigned to outside specialty contractors. Local permanent jobs are largely limited to low-wage, low- or no-benefit inspector jobs intended to spot problems for which corporate headquarters will have to bring in outside specialists. The DEIS provides no information to suggest the contrary.

In short, the DEIS discussion of economic benefits is long on projections and modeling, but woefully short on concrete information and analysis of the experience of actual operating wind farms. As such, the discussion provides very little basis for any solid conclusions on the economic benefits the community may expect from the project, apart from direct cash payments to local governments and a few lucky landowners. (Submittal 340 – Abraham, Gary)

Response: The DEIS identifies specific benefits that the National Academy report recommends. DEIS Section 1.1.8 uses JEDI model results to estimate the overall level of benefits that can be expected from a project such as the Stony Creek Wind Farm. DEIS Section 3.12 discusses specific benefits and how they will affect the local area. This section identifies the number of direct hires expected to result from the Project and the total payroll for these direct hires. These are long-term jobs that will endure for the life of the Project. This section also identifies specific positive and negative economic effects the Project would bring to the local area. DEIS Table 35 lists tax-related revenues that would be generated by the Project and identifies how these compare to the overall tax burdens of different jurisdictions.

Post-construction jobs are described in DEIS Sections 3.12 and 1.5.2. The commenter provides no basis for the assertion that permanent O&M jobs require specialty skills that will require personnel be brought in from outside the area. As stated in FEIS Section 6.26.6, Stony Creek will hire local operations personal if possible. Skills required for permanent O&M jobs are similar to that required for many agricultural jobs and Stony Creek has no reason to expect it cannot fill its operations staff with local hires, and provide them training in the specific areas needed to successfully operate the wind farm. At the nearby High Sheldon Wind Farm, a local operations team of nine people included eight people hired from the local area and one person hired from elsewhere in New York. Please refer to FEIS Section 6.26.6 for a testimonial statement from one of the individuals employed at the High Sheldon Wind Farm.

Construction of the Project would require a range of skills and services, many of which can be provided by companies from the local area or region. Experience in constructing other wind farms in Wyoming County has shown that local companies can play a significant role in construction. The commenter offers no evidence to support the assertion to the contrary.

Lastly, concrete evidence of economic benefits is evident by considering the payments received by other host communities near Orangeville. Local tax burdens have been significantly reduced or eliminated. The Wyoming County Industrial Development Agency has received significant fees that will be used to foster economic development.

The economic benefits of the Project are primarily in the form of transfer payments, thus the commenter's focus on the number of jobs created is overly narrow. SEQRA and the Final Scope require, and the DEIS and FEIS provide, an analysis of a full range of economic benefits, including but not limited to this metric.

6.26.8 Town-Owned Wind Farm (045, 132, 343)

At the public hearing on May 7, 2009, I suggested the town consider constructing it's own wind farm. Information will be resubmitted indicating funds are available through a clean renewable energy bond at 0% interest from the Federal Government. The projected $100,000 profit per year after paying the mortgage and all operating expenses would provide the town over 3 million dollars over the life expectancy of one turbine. The town would have total control of the number of turbines, their size, siting, and profit distribution. We may only need 5 turbines at $ 100,000 per year instead of the 59 proposed by Invenergy in stage 1. The only response I heard was that municipal ownership was not illegal. I'm not against wind turbines or other forms of renewable energy, but I haven't heard that consideration has been given to any other energy supply alternatives as required by the DEIS, Section 4 Alternatives. The proposed 59 wind turbines may not be the only, or the best solution, It is more likely the easiest. On such an important issue, the easiest course of action may not be the best. (Attachment: J. Nevinger letter, 3 pp.) (Submittal 045 – Nevinger, James; 343 – Nevinger, James (verbal))

I want to know when the study will be released on the proposed plan in regards to Town ownership of turbines such as the one being considered by the Town of Fabius in Onondaga County. This was an option presented at one of the Town meetings on the question of wind turbines. (Submittal 132 – Jensen, Paul)

Response: This EIS evaluates a project proposed by a private entity which would utilize privately-owned lands. The Town may at its discretion acquire property rights and consider its own project, but it may not reject a private project because it prefers public ownership.

6.26.9 Project Economics (334)

(Item #8) The DEIS should inform the Town Board and residents of the Stony Creek business model - and possibly lessen the fears of those who believe that this project will benefit big business at the expense of local inhabitants, Surely the investors and planners of this project have a very good idea of the total wealth to be generated by the proposed wind farm, It would be helpful for the Town to see a Table or spreadsheet of the projected revenues including the amount of power estimated to be produced by each wind turbine and the anticipated prices at which the electricity will be sold to the grid. Production Tax Credits and Investment Tax Credits should be clearly identified and fully articulated. Only by having some concept of the total economic scale of the project can residents feel that a just, appropriate and equitable distribution of wealth is being proposed. A full and complete presentation of the costs and revenues should go a long way towards providing comfort and confidence to the citizens of Orangeville that they will not be getting ripped off. (Submittal 334 – Bassett, David)

Response: SEQRA is an analysis of the environmental impacts of a project to ensure a project decision incorporates environmental factors along with social and economic factors. The economic factors to be considered are the benefits and costs to the community, not the company. There is no authority for any municipal land use decision to consider the financial benefits to the applicant. Certainly the commenter would not tolerate the Town deciding whether he could build a house without first undergoing a town review of his personal finances. A comprehensive presentation of the economic benefits has been made.

6.27 Property Values

6.27.1 Texas Plains Presentation (131)

According to case studies presented at the February 2009 South Texas Plains Agriculture, Wind and Wildlife Study, property values decrease 10-30% in areas of wind turbine facilities. Sales between March 2006 and August 2007 showed land selling at $850.00 an acre when turbines were on the property while property with no turbines in visual range sold between $1,200 and $1,536 an acre. Diminution in value ranged from 29-45% with an average of 37%. When turbines were within .2-.4 miles diminution in value was 26%. When turbines were within 1.8 miles diminution in value was 25%. These figures were based on actual sales. There is also the potential for additional loss of 15-25% due to wind turbine infrastructure, substations, additional roads and high power transmission lines. (Submittal 131 – Jensen, Kathleen)

Response: The subject "case studies" are part of a power point presentation given at a Texas conference in February 2009 by Derry Gardner, a Texas real estate agent and appraiser.[139] Gardner's presentation includes slides emphasizing how tall wind turbines are, criticizes a 2003 property values study by the REPP as lacking sufficient variables, and then offers two "case studies" based on property sales in Texas.

Gardner's first case study is an anecdotal comment that one potential sale in Erath County was lost because a buyer did not want turbines visible from property purchased for retirement purposes.

Gardner's second case is a comparison of sales prices for three properties near wind turbines in Taylor County against a set of four other properties in Taylor County that Gardner considered to be comparable. Gardner shows that the prices for each of his selected three properties near the wind turbines are less than those of his four selected comparables. Gardner's summary statistics are the ones cited in Submittal 141.

Ironically, Gardner criticizes the REPP report for not considering enough variables, but he ignores several key variables in his analysis.

- Gardner makes no reduction for differences in parcel size, even though the first sale property was half of the size of the second sale. No information is provided on the four comparables regarding higher $/acre sales prices.
- Gardner's compares sales that occurred over a 17-month period (March 2006 to August 2007), but he assumes no changes in prices due to market movement. The time period used encompasses the time when land sales began to diminish as part of the financial crisis, but this potential effect is not addressed. Taylor County is in an area of Texas where the "regional market for rangeland properties was active in the first half of 2007, but had little to no activity the second half" – the time period when the last sales occurred.[140] As to the specific area where Taylor County is, the same report noted "Demand was good in the first half and weaker in the second half of the year. However,

[139] Impact of Wind Turbines on Market Value of Texas Rural Land, Gardner Appraisal Group, Inc., available at www.wind-watch.org.

[140] American Society of Farm Managers and Rural Appraisers, Texas Chapter, Texas Rural Land Value Trends 2007, available at http://recenter.tamu.edu/data/rland/ASFMRA07.pdf., at 13.

rather than any drop in price, the market showed no sales for the last five months of 2007" – a period that includes sales used in Gardner's Case Study.

- Gardner doesn't address whether the sales included wind rights. According to the 2007 ASFMRA Report,[141] in the Texas region that includes Taylor County, during the time of Gardner's case study, sellers began distinguishing between wind rights and property rights, similarly to the way mineral rights are now recognized. The study only considered fee simple sales, but it is worth noting that the first sale that Gardner mentions is a property with three wind turbines on its property.
- Gardner reports that he has adjusted the sales prices of all the properties to reduce the value of the improvements and that he considers all other characteristics to be similar. Specifics of these adjustments and characteristics are not provided.

The "case studies" mentioned in the comment contains insufficient evidence to support Mr. Gardner's conclusions. In contrast, the studies referenced in the DEIS, in particular the 2009 study published by Lawrence Berkeley National Laboratory (LBNL) analyze significantly more sales and provide data that is more statistically significant and robust. The 2009 LBNL study analyzed house prices from 7,459 transactions within ten communities associated with 24 wind farms throughout the United States. The Gardner presentation provides limited evidence on 8 sales.

6.27.2 Orangeville Property Values Decreased in 2009 (131)

Sperlings best places to live internet site also has housing values decreasing 2% for 2009 in Orangeville. I can hardly wait to see the percentage they decrease once these industrial wind turbines are in place. (Submittal 131 – Jensen, Kathleen)

Response: Comment noted. No decrease in property values due to the Project are anticipated.

6.27.3 Property Values Currently Rising (077, 347)

Property values in the town seem to be on the rise, even though we are halfway into the project. (I realize that this has nothing to do with the project). (Submittal 077 – Compton, Philip)

I live in Warsaw. I own land in Orangeville. I pay taxes in Orangeville. As far as land value, I'm just going to touch on a few things. My assessment went up this year. Sure, everybody's did. (Submittal 347 – Almeter, Steve (verbal))

Response: Comments noted.

6.27.4 Bias of the U.S. Department of Energy (057, 354)

The conclusion of Invenergy's Stony Creek Wind Farm studies regarding property values reads as follows: "Both local and national studies demonstrated that there is no direct effect on property values from wind farms. Therefore, no mitigation is necessary." Their conclusion is based on a study done by the National Renewable Energy Laboratories (2009). NREL is an outgrowth of the U.S. Department of Energy and it is the only federal agency dedicated to the research,

[141] American Society of Farm Managers and Rural Appraisers, Texas Chapter, Texas Rural Land Value Trends 2007.

development, commercialization and deployment of RENEWABLE ENERGY. Why would Invenergy select a research group with such an obvious bias? Why didn't they select two certified independent appraisal groups that are in accordance with the standards set by the International Association of Assessing Officers to perform this task? As stated in Invenergy's DEIS report on property values, the conclusion arrived at by this renewable energy group was based primarily on the use of a statistical tool called regression analysis. Such analysis is concerned with the problem of describing or estimating the value of a dependent variable, in this case property values, on the basis of one or more independent variables such as property value appraisals, homogeneity of property characteristics, density/proximity/specific location of turbines, etc. The study states it "analyzed" house prices from over 7,000 transactions in 10 different states "associated" with wind farms. Such a heterogeneous population makes similarities and differences impossible to assess. Moreover, it neither cited the specific data included in the study nor detailed its methodology. The reader cannot learn from this report the location or type of transactions included in the study nor any other possible independent variable(s) used in the equation (homogeneity of property, property characteristics, proximity, density, specific location of turbines, etc.). It simply concludes that "Neither the view of the wind facilities nor the distance of the home to those facilities is found to have any CONSISTENT, MEASURABLE AND STATISTICALLY SIGNIFICANT EFFECT on home prices." If there was no measurable effect, is the study suggesting that the correlation between property values and proximity of wind turbine farms is r=O? How did this study control for homogeneity of such a diverse population of properties. Since there are literally thousands of possible real estate regression models, did the statisticians use a set of standards tested for accuracy, validity and reliability? How were the independent variables selected? Did any of the properties selected have a pre/post appraisal of value? What/how were specific property characteristics, if any, included in the data? In effect, why weren't the data and methodology detailed in the report? These are some of the many questions that their conclusion leaves unanswered. As you know from reading about the recent global warming science scandal, conclusions based on a statistical model can easily be skewed depending upon the variables a statistician includes, excludes or manipulates in a study.

Biased statistical studies aside, it is simply a matter of common sense that wind farms seriously affect property values. Given two identical rural homes and properties, one with wind turbines sited on neighboring properties and the other with no such encumbrances, in which one would you invest? For everyone, except those devoid of logic and common sense or that have a financial interest in construction of wind farms, the answer is painfully obvious. It does not rely on the conclusions of a statistical model; it is based on the reality of the market place.

Furthermore, while wind developers and their supporters vehemently deny that wind farms have any negative effect on property values, they refuse to provide legally enforceable guarantees of compensation for property value losses caused by such significant, long-term aesthetic, health and safety alterations of the natural environment.

For all those supporting the claim that proximity of wind turbine farms have no negative impact on property values, I request that you convince the Orangeville Town Board and the Invenergy Wind Company to sign a legally enforceable agreement that protects property owners against property loss. If Invenergy's DEIS stated conclusion is sustained, it will cost them nothing.

There is no consolation in being right when the victim is the significantly reduced value of your property and a diminished quality of life. Therefore, I strongly recommend that all non-participating Orangeville residents have their property appraised as soon as possible. Hopefully,

no one will require a post-appraisal. (Submittal 057 - Zampogna, Joseph; 354 – Zampogna, Joseph (verbal))

Sadly, this DEIS relies heavily on assertion. I believe the Town Board should ask for more. The assertions are rampant throughout the DEIS - a few examples are provided below:

- *Page xxxii - To identify to what extent, if any, property values would change in the Town of Orangeville following the construction of the Project, Stony Creek reviewed five comprehensive wind farm property value studies, including a National Renewable Energy Laboratories ("NREL") 2009 which analyzed house prices from 7,459 transactions within ten communities associated with 24 wind farms across the United States, including 2 wind farms in New York State. The Report concluded that "Neither the view of the wind facilities nor the distance of the home to those facilities is found to have any consistent, measurable and statistically significant effect on home prices.*

It is likely that the report referenced above was conducted by the Lawrence Berkeley National Laboratory (Report LBNL-2829E, December, 2009) and NOT by the National Renewable Energy Laboratory. The next sentence following the above-referenced sentence is

> *"Although the analysis cannot dismiss the possibility that individual homes or small numbers of homes have been or could be negatively impacted, it finds that if these impacts do exist, they are either too small and/or too infrequent to result in any widespread, statistically observable impact."*

Since this report was published, it has drawn serious criticism from any number of sources. The underlying problem is that the study fails to adequately examine the effects on those homes near the turbine complex that ARE affected. By casting the reference area widely enough, those homes that are affected become statistically insignificant. The DEIS concludes this section with the following sentence: The results of all models confirmed the results in the base model: housing prices are not impacted by the presence of a wind farm.

This is NOT true, as it is an oversimplification of the LBNL finding. Consequently, the DEIS, as written misinforms. Our Town Board and citizens deserve better. (Submittal 334 – Bassett, David)

There are many [more] examples of assertion substituting for solidly referenced and footnoted findings. On this basis alone, the DEIS should be rejected as unworthy of the Town Board and the citizens of Orangeville. (Submittal 334 – Bassett, David)

Response: The commenter is correct that statistics cited on DEIS page xxxii were from a report by the Lawrence Berkeley National Laboratory, not NREL. The title of the report by the Lawrence Berkeley National Laboratory that was the source of the statistics is *The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic*

Analysis prepared by the Ernest Orlando Lawrence Berkeley National Laboratory, San Diego State University, and Bard College for the United States Government.[142]

According to the study co-authors'[143] response to similar comments from the Industrial Wind Action Group (IWAG):

> *Hedonic (regression) analysis vs. IIAO methodology:*
>
> *As noted in the final report, neither hedonic pricing models nor the Berkeley Lab research is designed to assess or appraise properties (i.e., to establish an estimate of the market value of a home at a specified point in time, which is the context in which the IAAO standards are applicable). Rather, hedonic models are designed to estimate the marginal contribution of individual house or community characteristics to sales prices, which requires hedonic models to rely upon large data sets with a sizable number of explanatory variables. On the other hand, appraisal models (e.g., automated valuation models) in general are based on small, localized data sets (i.e., "comps") and a limited number of explanatory variables that pertain to nearby properties. Hedonic models can also be used as appraisal models due to their use of significantly more information (e.g., diverse spatial, temporal, and characteristic information) and rigorous methodology. Automated valuation models cannot, however, be reliably used to measure marginal effects because they do not employ sufficient information to do so, and, more importantly, they do not rigorously hold controlling characteristics constant, which would bias any resulting estimates of marginal effects. As discussed in Section 2.1 of the final report, the hedonic pricing method is well established and widely used in the economics and real estate literature for evaluating the marginal impacts of environmental amenities and disamenities on housing prices. Standards relevant for estimating a hedonic function have been developed through an extensive literature that began with the seminal works of Rosen (1974) and Freeman (1979). The Berkeley Lab report clearly documents the history and use of the hedonic pricing model, its appropriateness for exploring the possible impact of wind projects on property values, and how the multiple statistical models employed in the Berkeley Lab research relate to the broader economics and real estate literature.*
>
> *Heterogeneity of sample and selection of variables*
>
> *[Comment that] data are pooled from different study areas across the country: As discussed in detail in the Appendix F, models specific to individual study areas were extensively tested and evaluated. These models, however, were found to be less parsimonious than the final models and exhibited divergent and spurious coefficients, as well as large standard errors, for the variables of interest, presumably because of the small number of home sales in each of the individual study areas near the wind turbines. As a result of this extensive analysis, a pooled model is used. The details of this process and the rationale for selecting a pooled model are clearly documented in the final report.*

[142] Hoen, B., R. Wiser, P. Cappers, M. Thayer, and G. Sethi. 2009. The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis. Report prepared by employees of the Ernest Orlando Lawrence Berkeley National Laboratory, San Diego State University, and Bard College for the Office of Energy Efficiency and Renewable Energy, Wind & Hydropower Technologies Program, U.S. Department of Energy. Washington, D.C. Available at http://eetd.lbl.gov/ea/ems/reports/lbnl-2829e.pdf

[143] **Response to Industrial Wind Action Group Critiques** Ryan Wiser, Ben Hoen, Peter Cappers, Mark Thayer, Gautam Sethi December 2, 2009

[Comments that i]ndividual variables have a significant amount of variation: Though the IWAG argues that homogeneity in the dataset is a prerequisite for a regression analysis, the very purpose of a hedonic model is to control for heterogeneity in the data to evaluate the marginal impact of varying house characteristics. In general, then, variation in housing characteristics within the data set is valuable as long as the variation in the independent variables explains the variation in the dependent variable, and there are no omitted variable biases. The relatively high adjusted R2 (~ 0.77) found in the Berkeley Lab study - which is a cross-sectional property value analysis - substantiates the appropriateness of the data and model used. Further, as discussed in the report and above, coefficient estimates for a variety of property characteristics are consistent with those of other practitioners using similar methods. Finally, as discussed above and in Appendix G in the report, extensive testing regarding the impact of outliers and influential observations is conducted, ensuring that individual questionable sales transactions are not unduly influencing the results of the study.

[Comment that the] estimated coefficients are not allowed to vary across study areas: As addressed in the first bullet above (and in Appendix F in the report), alternative hedonic models were tested in which all variables were interacted with dummy variables for the individual study areas; in these models, the value of a fireplace in one study area, for example, is allowed to differ from the value in other study areas. Appendix F clearly reports how the final models were selected from multiple alternative specifications. Importantly, the focus variables, namely the effect of proximity and views of wind facilities, are robust to the inclusion/exclusion of these interactions. As such, including these interactions in the model does not impact the results of the Berkeley Lab analysis.

The report clearly describes the data sets and analysis employed, and tests the relationship between distance to the turbines, view of the turbines (among other variables) to sale price in multiple ways. The Lawrence Berkeley National Laboratory study is the latest and, perhaps one of the most authoritative, of a series of studies identified and summarized in DEIS Section 3.13 that find no negative impacts to property values. While the commenter is correct in noting that the LBNL study did not claim to show that the presence of wind turbine will in no cases ever impact the sale price of a property, such an effect was not discernible in this large and rigorously conducted study.

6.27.5 Reverse Setbacks (074, 375)

The proposed site plan indicates that our 75 acres will be impacted in a number of important ways, including noise pollution, shadow flicker, destruction of scenic views and loss of rural character, along with destruction of some property to allow for road construction. The 1,908+ feet of road frontage we have on Centerline is now un-salable since any home built within a 2 acre plot is too close to the turbine setbacks. (Submittal 074 – Wilkenson, Nyla; 375 – Wilkinson, Nyla (verbal))

Response: There are no reverse setbacks. The setbacks in the Orangeville Town Code limit how close wind turbines can be placed to existing dwellings; it does not limit in any way how close new dwellings can be built to existing wind turbines.

6.27.6 Property Values Will Decrease (337)

Project will accept decreased property valuations. (Submittal 337 – Ramsey, Gerald and Donna)

Response: Experience at the High Sheldon Wind Farm and studies identified and summarized in DEIS Section 3.13 demonstrates there is no reasonable anticipated adverse effect of the project on property values.

6.27.7 Property Values Won't Decrease (351)

I also did some research about property values. Turns out that in Sheldon almost every property sale in 2008 and 2009 was sold above the assessed value. So how can anyone honestly claim that the wind farms have a negative impact on property values when right down the road the exact opposite is true? (Submittal 351 – Mengs, Marge (verbal))

Response: Comment noted.

6.27.8 Property Protection Plan (005, 012, 031, 039, 051, 081, 089, 110, 111, 112, 113, 114, 116, 118, 119, 131, 138, 141, 151, 157, 168, 178, 185, 210, 211, 233, 245, 257, 266, 311, 313, 317, 345, 331)

In researching articles regarding decreasing property values when industrial wind turbines are erected I have found that many communities are now insisting that the wind turbine companies sign an agreement to reimburse homeowners whose property values have declined due to the existence of industrial wind turbines. I would like such an agreement signed by Invenergy and the members of the Orangeville Town Board to cover my home if the town council continues to ignore the residents with valid complaints concerning the industrial wind turbines. (Submittal 131 – Jensen, Kathleen)

One of the most important issues that needs to be fully investigated in the DEIS is the effect that Stony Creek Wind farm will have on nonparticipating property values. Extensive information is available that shows neighboring properties will be adversely affected when located near a wind farm. If Invenergy and the Town of Orangeville are so confident that this massive project in our Town will not have any ill effect on our property value they should take appropriate action.

The Town Board needs to develop and implement a PROPERTY VALUE PROTECTION PLAN. (If a home cannot be sold for fair market value, then Invenergy must pay the difference) This plan would assure and protect ALL impacted citizens within the footprint of any wind turbine, in or outside the project area. If what Invenergy's DEIS indicates is true (wind turbines have no adverse impacts on property values), then they should have no opposition accepting a PROPERTY PROTECTION PLAN. The Town and Invenergy must be prepared to compensate adjacent property owners for any property rights (value) taken as a result of the introduction of wind turbines.

What safeguards are being put into place to protect our property values with regard to wind turbine placement? Please find attached the Property Protection Plan that has been submitted to the Town Board January 14, 2010 and as part of the DEIS Scope process. (Attachment: Property Protection Plan, 5 pp., ad for CWEST study, 2 pp.; Wind and property value article by K. Maize, 3 pp. Property Devaluation and Wind Turbine Farms, 3/25/2010, no author, 2 pp., refers to attachments that are not supplied, but appears to be a copy of Comment #57) (Submittals 005 – Humphrey, Peter; 031 – Hathaway, Hal; 081 – Burgio, Helene; 119 – Stenson, John; 141 – Dickinson, Darryl; 151 – Dickinson, Mary; 178 – Malicki, Richard; 210 – Makson, Paul; 257 – Lomanto, Ron and Lynn; 266 – Moultrup, Steven)

The Town Board has been given a property protection plan to protect non-participating neighbors and to give them reassurance that their property values are protected. Will the Town Board of Orangeville agree to a property protection plan? The DEIS has not covered this issue thoroughly and if it is true that property values are not affected by wind farms they should have no objection to a property protection plan that will cost them nothing. (Submittals 012 – Humphrey, Sally; 039 – Louisas, Angelo; 051 – Hopkins, Harold; 089 – Burgio, Helene; 138 – Dickinson, Darryl; 157 – Dickinson, Mary; 168 – Malicki, Alice; 185 – Librock, John; 211 – Makson, Paul; 311 – Davis, Barbara; 313 – Wilkinson, Nyla; 317 – Wilkinson, Ted; 233 – Nevinger, Mary; 245 – Nevinger, James)

Property value - Nowhere in the DEIS did I see anything guaranteeing non-participating neighbors' property values. Since wind industry LLC's go to great lengths to declare that property values will NOT be affected by industrial wind installations, why isn't the creation and adoption of a "Property Value Protection Plan" that would protect ALL Orangeville citizens included in the DEIS? (Submittal 331 – Barton, Mary Kay)

I think that's all I got to say. Well, I'll talk about something else. Property values. I think the Town Board should definitely back up their belief that there will be no loss in property values by going along with the resolution to support that if anybody were to lose their property values due to proximity of a siting of a wind turbine, they would be compensated for the loss. (Submittal 345 – Hopkins, Harold (verbal))

Attica residents would like to be included in the property Protection Plan. (Submittals 110 – Donohue, James; 111 – Malark, Michael; 112 – Kibletz, Christopher; 113 – Carrick, George; 114 – Snyder, Allen; 116 – Dusterhus, Matthew; 118 – Piazza, Richard)

Response: There is no evidence presented that any wind farm in NY has harmed property values. No substantive data is provided to allow the Town to further consider this comment. There is no New York statute authorizing the imposition of a property value guarantee, or any other mitigation in the absence of injury. The request for a property value protection guarantee is based on unsupported allegations of negative impacts on property values.

Values in surrounding communities with wind farms have not been harmed. In the absence of negative property value impacts that are measurable and predictable with a high degree of certainty, as is the case here, where there is neither statistically reliable nor even anecdotal evidence to support the claim, no such plan is necessary.

6.27.9 Studies Showing Negative Property Value Impacts (132)

I have found several articles written by independent appraisers along with figures to back them up showing the decrease in property values near industrial wind turbines. Independent appraisers and their data should be what is reviewed and made public to the residents of Orangeville. The Town Board should be asking independent appraisers for their input not taking

the study done by the Department of Energy which could hardly be considered an unbiased report. According to independent appraisers, a view adds value to rural property. Take way the view and the value decreases. When wind turbines would be seen looking in all directions or entirely covering landforms within a locality, the project will be viewed negatively and further study will be needed. (Submittal 132 – Jensen, Paul)

Response: The Department of Energy Report, as well as the numerous studies referenced in DEIS Section 3.13 were prepared by independent specialists. The commenter's disagreement with their conclusions does not make them biased. The commenter does not specifically identify why or how the Project would harm the Town of Orangeville. No substantive data is provided to allow the Town to further consider this comment.

It appears the comment pertaining to the correlation between view and value is taken from a questionable Texas study, discussed in FEIS Section 6.27.1, where it was made without support.

6.28 Public Safety

6.28.1 Traffic Accidents in Sheldon (015, 038, 087, 103, 140, 154, 240, 251, 260)

As many Orangeville residents now know when driving through the Town of Sheldon, huge wind towers cause significant distraction to drivers on high-speed roads within a wind farm project area. Flashing red lights at night and enormous turning blades in the daytime cannot be ignored by drivers. The tendency is to take your eyes off the road and vehicles will then drift out of their lanes. This could lead to vehicles going off the road or head-on collisions with oncoming traffic. Has the Town of Orangeville. NYSDOT or Invenergy studied this now that the Sheldon wind farm has been operating for more than a year? Is data available for the public to review? Has the Wyoming County Sheriffs Department been asked about this issue and if so what do they recommend? (Submittals 015 – Humphrey, Sally; 038 – Maxwell, Fay; 087 – Burgio, Helene; 103 – Dylag, M.; 140 – Dickinson, Darryl; 154 – Dickinson, Mary; 260 – Moultrup, Steven; 240 – Nevinger, Mary; 251 – Nevinger, James)

Response: Flashing lights are used on thousands of structures and there is no evidence that these lights cause drivers to drift out of their lanes. Figure 24 shows statistics on automobile accidents on NYS Route 20A and NYS Route 77 in the Town of Sheldon, based on data provided by The Wyoming County Sheriff's Department. As seen in the figure, these roads average approximately 2 to 3 accidents per month per year and this accident rate has not changed appreciably since wind turbines began operating in this area in March 2009.

If visibility of the High Sheldon turbines distracted drivers to such an extent that their vehicles left the road, or crossed the centerline, the mean number of accidents per month before operation of the wind farm should be less than the mean number of accidents per month after construction. This is not the case. Similarly, the Stony Creek Wind Farm is not expected to result in a greater number of automobile accidents due to distracted drivers.

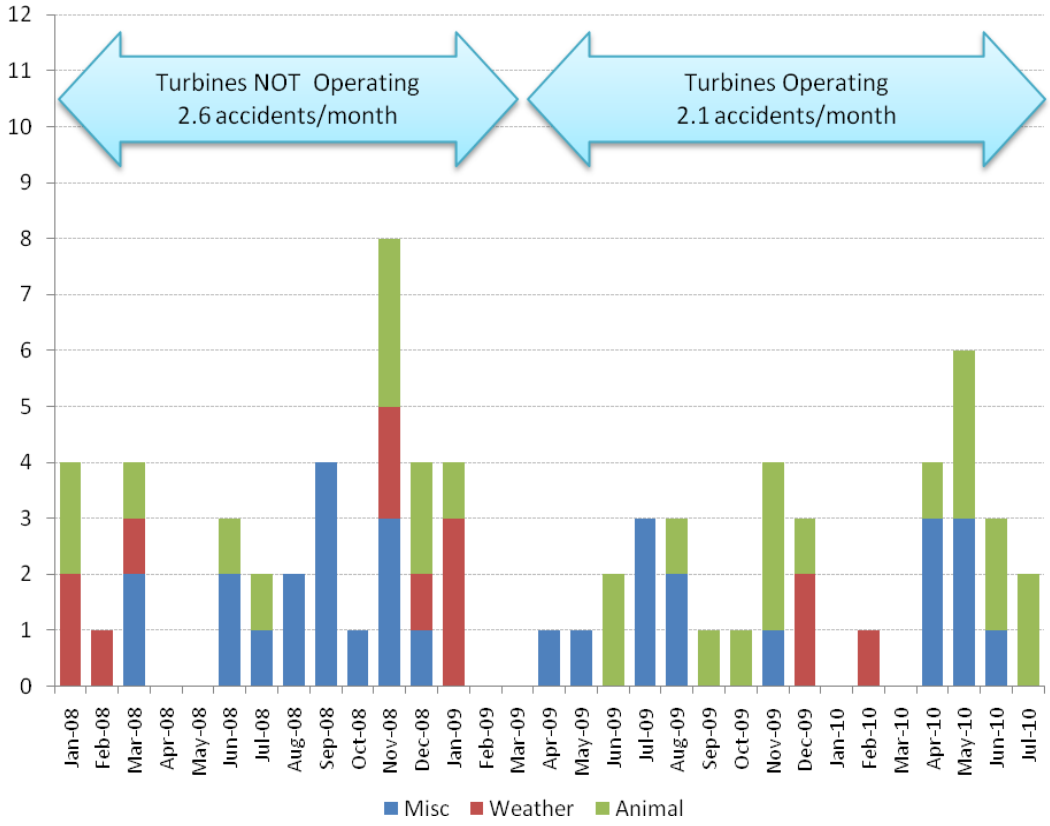

Figure 24. Automobile Accidents in the Town of Sheldon on NYS Routes 20A and 77

6.28.2 Emergency Response Plan (341)

Developer should provide emergency response plans, notification and coordination procedures. Specify plans and procedures for addressing electric line outages, specification of 24-hours a day storm and emergency response situations. Include measures for communication and coordination with operators of existing utility facilities, and residents of adjoining or affected locations. (Submittal 341 – NYS Dept of Public Service)

Response: A draft Emergency Response Plan was provided as DEIS Appendix I. This plan addresses communication, equipment, and resources to deal with fire, medical, chemical, security, and severe weather emergencies. Table 2 of the plan lists local officials to be contacted in the event of an emergency that could affect the public.

An electric line outage will not be an emergency situation, as the substation is designed to deal with such an outage with no impact to electric system reliability.

6.28.3 Emergency Response Personnel and Equipment (018, 144, 160, 177, 179, 207, 326, 268, 232, 244)

I would like to know specifically what equipment would be available in case of an emergency and where it would be kept. No fire departments or emergency personnel exist in the Town of Orangeville and this necessary function is currently contracted out to neighboring Towns to cover Orangeville. All of the Public Safety sections in the DEIS should be located in a Safety and Operations manual that addresses each issue separately and its implications and procedures.

Will new required safety equipment be made available to the Town or local emergency personnel?

How many Invenergy employees would be trained for an emergency, ie. fire, collapse, and what would their qualifications be? Would these personnel be local residents and who would train them? If they are not local residents where would they live? We do not want the municipalities to be caught short and be liable should anyone get injured because they were unprepared. This is a whole new area of service. (Attachment: 36 pp.) (Submittals 018 – Raab, Sherri; 144 – Dickinson, Darryl; 160 – Dickinson, Mary; 177 – Malicki, Richard; 179 – Librock, John; 207 – Makson, Paul; 326 – Bell, Ron; 268 – Moultrup, Steven; 232 – Nevinger, Mary; 244 – Nevinger, James)

Response: DEIS Section 1.5.6 describes the relatively low fire risk for the Project and mitigation measures to minimize this risk. The Emergency Response Plan provided as DEIS Appendix I describes procedures to deal with fire or medical emergencies that could occur in Project facilities, including procedures to take in the event of an injury to an O&M technician while working in a tower and in the event of a fire in one of the Wind Turbines.

As described in the Emergency Response Plan, the Project will be equipped with Tractel rescue equipment. Tractel equipment includes harnesses and ropes needed to rescue injured personnel from a wind turbine nacelle. Stony Creek will train all of its Project employees in the use of the Tractel rescue equipment.

As described in the Emergency Response Plan, if an injury occurs in the Wind Turbine tower or nacelle, local emergency responders will be notified through 911. Project personnel will lower the victim to the ground level. Local emergency crews will take control of the victim once he is lowered to ground level. As such, the Project will not require local emergency responders to perform tower rescues.

The Emergency Response Plan also outlines steps for Project personnel to take in the event of a fire in a Wind Turbine. Project personnel will extinguish incipient fires, but in the event of a larger fire they will evacuate the Wind Turbine and notify the local fire department. As stated in DEIS Section 3.14.5, if the fire department is notified, the responsibility of the local fire department would be limited to ensuring that no ground fires resulted from the WTG fire. The local fire department is not expected to extinguish larger Wind Turbine fires in the nacelle of a Wind Turbine.

6.28.4 Turbine Fire (110, 111, 112, 113, 114, 115, 116, 117, 118, 192, 193, 194, 195)

In the event of a collapse or fire of a turbine, what protocols are going to be taken by Stony Creek Wind project to contain said events and to correct any damage done to wildlife and land? (Submittals 110 – Donohue, James; 111 – Malark, Michael; 112 – Kibletz, Christopher; 113 – Carrick, George; 114 – Snyder, Allen; 115 – Piontkowski, Ronald; 116 – Dusterhus, Matthew; 117 – Stock, J.; 118 – Piazza, Richard; 192 – Clark, Kevin; 193 – Clark, Shirl; 194 – Bonner, John; 195 – Aprial, Pete)

Response: DEIS Section 3.14.2 describes the extremely low risk of turbine collapse. No special mitigation measures are necessary for this event, as it is extremely unlikely. If a tower were to collapse, risk to wildlife and land would be only the land and wildlife immediately under the area where the tower fell. Corrective actions would include deployment of machinery to

remove the collapsed equipment and grading to restore ground contours to original condition. If any fluids were leaked, they would be cleaned up in accordance with the Project's Spill Prevention Control and Countermeasures Plan, a draft of which was provided in DEIS Appendix I. Local firefighters would likely be called to respond to the scene to ensure that no ground fires would be started or spread immediately after the turbine collapse.

DEIS Sections 1.5.6 and 3.14.5 describe the fire risk posed by the Project components and the fire protection measures to be employed by Stony Creek. As stated in the DEIS, if a wind turbine were to catch fire, Stony Creek would recommend that it be allowed to burn itself out. The responsibility of the local fire department would be limited to ensuring that no ground fires resulted from the WTG fire. Specific responsibilities during a fire emergency are described in the Project's Emergency Response Plan, a draft of which is provided in DEIS Appendix I.

6.28.5 Blade Failure and Transmission Lines (341)

Tower Collapse and Blade Failure, page 158-160. The discussion of blade failure does not address overhead utility infrastructure such as high voltage transmission facilities. (Submittal 341 – NYS Dept of Public Service)

Response: The DEIS pages referred to in the comment provide real world examples of turbine collapses and the distances that any debris fell from the tower base in these failures. For a discussion of the risk such failures could pose to high voltage electric transmission lines, the commenter should refer to DEIS Section 3.14.8 (Electric Transmission Facilities) which states:

> If a WTG was installed significantly close to an above ground electric transmission line, the transmission line could be damaged in the unlikely event of a collapse of a nearby WTG tower or a blade failure. As discussed in the *Tower Collapse and Blade Failure* portion of this section, the risk of tower collapse is unlikely and is limited to the area immediately around the base of the WTG. Indeed, there are no known examples of wind turbines collapsing or otherwise falling in an area outside of the standard WTG height fall zone of 1.0x Tip Height. Accordingly, the risk to aboveground power lines is effectively mitigated by providing a setback of 100% of tower tip height between WTG bases and existing electrical lines. (Note that this is a quote from the DEIS; in the FEIS layout, the setback to power lines is now 150% of the tip height.)

FEIS Section 6.28.6 discusses setbacks of the proposed project, with the FEIS layout and the 1.6-100 wind turbine, to existing electric transmission lines. All turbines will be setback from existing electric transmission lines by a distance of 1.5 times the tip height or more.

6.28.6 Transmission Line Setbacks (341)

Electric Transmission Facility - Table 42. The wind turbine generator clearance from the nearest power line for T-55 and T-56 is 1.3 1 and 1.43 times the tip height of the turbine. PSC has recommended 1.5 times the tip height in previous cases. Please explain any circumstances or reasons why Stony Creek cannot achieve this clearance.

Page 164 includes a brief discussion of wind turbine setbacks from bulk transmission system facilities, and identifies proposed setbacks for two turbines that do not meet the minimum recommended standard the PSC established in the Sheldon Energy CPCN in Case 07-E-02 1 3. The DEIS simply concludes that since no other turbines have fallen outside of the turbine height

distance, there is no need to require a greater setback of turbines from transmission facilities. Proposed turbines 55 and 56 have offset distances of 520 and 570 feet, or 1.3 1 and 1.43 times the full 398 feet tall turbines proposed for the project. The DEIS does not identify any specific constraints or resource considerations in meeting the offset distances recommended by the PSC for bulk transmission facilities. Since the need for dismissal of the PSC policy is not substantiated in the information provided, additional analysis should be provided to establish a basis for consideration by the PSC in its future consideration of a CPCN Certificate under PSL section 68. (Submittal 341 – NYS Dept of Public Service)

Response: The revised project layout in this FEIS has turbines relocated to be 1.5 times tip height from the nearest portion of the NYSEG 230-kv transmission line structures that run through the middle of the Project Area. Table 53 lists the Project turbine locations that are closest to transmission lines. Note that the two turbines that were closest to the transmission lines in the DEIS layout have been removed from the layout. Also, setback distances in Table 53 are calculated for the FEIS layout, using the dimensions of the GE 1.6-100 wind turbine.

Table 53. WTG Near Transmission Lines

WTG ID-FEIS	Distance to Transmission Line	Tip Height Ratio(426 ft)	Nearest Transmission Line
T-58	691 ft	1.6x	230-kV Noble Wethersfield Line
T-36	710 ft	1.7x	230-kV NYSEG Line
T-51	781 ft	1.9x	230-kV NYSEG Line
T-59	1,185 ft	2.8x	230-kV Noble Wethersfield Line
T-49	1,274 ft	3.0x	230-kV NYSEG Line
T-37	1,477 ft	3.5x	230-kV NYSEG Line

Notes:

1. Distances are measured from center of the proposed turbine location to the nearest point of the transmission line structure. Structures are assumed to have a total width of 25 feet.

2. In the DEIS layout, two turbines labeled T-55 and T-56, were less than 1.5x tip height from the transmission line. In the FEIS layout, these turbines have been removed.

6.28.7 Fenner Collapse (291)

Please provide an update on the investigation of the recent tower collapse in Fenner, New York. Has the cause of that incident been established, and are there additional safeguards that should be implemented to avoid a similar occurrence at Stony Creek? (Submittal 291 – Stantec)

Response: The report documenting the suspected cause of the collapse is not yet available. Based upon a brief review of publically available aerial photographs, it appears the collapse was caused by a malfunction of the turbine foundation. It is important to note that the tower and blades fell to the ground within a distance of the foundation less than the maximum blade tip height.

To mitigate risk to public safety from a turbine tower collapse and apparent foundation failure such as what occurred at the Fenner wind project in Madison County, NY, Stony Creek will (i) install turbines away from homes and public roads by a distance that is equal to or greater than the turbine tip height, and (ii) hire a quality control inspector during construction to verify that foundations are installed in accordance with design documents.

6.28.8 GE Turbine Collapses Outside of the U.S. (291)

What information is available concerning the two collapses of GE 1.5 MW WTGs outside of the U.S. (cause, distance of debris travel)? (Submittal 291 – Stantec)

Response: Stony Creek has requested additional information from GE on this subject, but none has been provided.

6.28.9 Setbacks and GE Manuals (008, 014, 027, 041, 043, 062, 085, 091, 136, 156, 173, 198, 199, 229, 252, 259, 328, 337, 341, 361, 368)

Local Land Use Controls – Part 1.3.4 – Setback from the public road should generally be maintained at 1.5 times the maximum tip height. The analysis should include discussion of setback distance which reflects the turbine manufacturer's recommended setback distances for public roads. (Submittal 341 – NYS Dept of Public Service)

The DEIS needs to include an Operation and Safety Manual for the 1.6 mw GE turbine. (Submittals 008 – Humphrey, Peter; 014 – Humphrey, Sally; 027 – Raab, Sherri; 041 – Langenfeld, Nick; 043 – Powers, Brian; 085 – Burgio, Helene; 136 – Dickinson, Darryl; 156 – Dickinson, Mary; 173 – Malicki, Richard; 198 – Makson, Paul; 199 – Makson, Paul; 328 – Kaczmarek, Brian; 259 – Moultrup, Steven; 229 – Nevinger, Mary; 252 – Nevinger, James)

I would like to provide you comments regarding my concerns with the Draft Environmental Impact Statement, especially as it pertains to health and safety issues of the siting setbacks of these industrial wind turbines. In my comments to you at the May 7,2009 Public Hearing, I asked that you conduct independent studies and collect additional information on health and safety issues for these industrial wind turbines. The Wyoming County Planning Board, in its comments sent to you in April of 2009 regarding their concerns over the draft zoning law, asked that you provide a copy of the Safety Manual of the G.E. 1.5 MW model turbine in order to determine appropriate setbacks to ensure the safety of adjoining landowners. My husband, Peter Humphrey, in his DEIS Scoping comments dated January 4, 201 0 once again asked that the DEIS scope include a review of the safety manual of the G.E. 1.5 MW model turbine to ensure the safety of adjoining landowners. Nowhere in this DEIS do I find a copy of this safety manual or legitimate information that provides support for the safety aspects of these setbacks.

This town board has failed to address these legitimate concerns on three separate occasions. I must ask you, "WHY"? I get the impression that you do not really care about the safety of Orangeville residents. Since this proposed project has four turbines located roughly 800 feet from our property line, and Vestas, a manufacturer of a similar size and style industrial wind turbine, requires a 1,300 foot safety setback, I am extremely concerned over the safety of my family. As I said last May, the Town needs to fulfill its fiduciary duty to protect its citizens health, safety, and welfare, whether it be in adopting zoning laws or reviewing an application from Invenergy.

I ask you one more time to review and disclose the safety manual for these types of turbines to prove to me and my family in the DEIS that we will not be at risk as we enjoy our property, including within 800 to 1,300 feet of these proposed turbines. Once again, Do The Right Thing! (Submittal 062 – Humphrey, Sally; 361 – Humphrey, Sally (verbal))

What troubles me is that the town is adopting a setback law that is unsafe and puts us, the citizens of Orangeville at risk. Why? So the developer can fit more turbines in the project area, at what cost, public safety? I have over 25 years in the electrical field and a good portion of that as a Safety Specialist. After doing some research, I found that even the turbine manufacturer wants a larger setback then what the town has adopted. What the manufacturer calls "A Safe Work Zone". I believe the setback laws should be such that I or any member (or members) of my family are safe anywhere on our property, 2,000 feet away from the house, or near the house. It is my property and I should not be restricted by what my neighbor decides to do on his. Please take another look at the setbacks that the manufacturer of the turbines recommends. The zoning law setbacks should not be less than this from property lines, not measured from residences. (Submittal 091 – Burgio, Michael; 368 – Burgio, Michael (verbal))

Project will create safety issues with close proximity of turbines to homes and yards. (Submittal 337 – Ramsey, Gerald and Donna)

Response: Turbine setbacks from public roads and houses are appropriate to mitigate risk from snow and ice shedding and the extremely unlikely event of a turbine collapse or a blade loss. The DEIS discusses all of these potential events:

- DEIS Section 3.14.2 addresses the potential for turbine collapse or blade loss. As discussed in the DEIS, experience shows that the few turbine that have fallen have fallen within 1.0x the tip height of the turbine. Thus a setback of 1.0x tip height is an appropriate setback to mitigate against the risk of tower collapse or blade loss. The Orangeville Town law provides minimum setbacks for roads and houses that exceed this distance, and therefore it provides an appropriate level of protection and safety from the risk tower collapse and blade loss.
- DEIS Section 3.14.1 addresses the potential for snow and ice shedding from a wind turbine. As discussed in the DEIS, experience and studies with turbines operating in northern conditions shows that ice and snow shedding from the turbine occur within 500 feet or less from the turbine base. The Orangeville Town law provides minimum setbacks for roads and houses that exceed this safe distance, and therefore it provides an appropriate level of protection and safety from the risk of ice and snow shedding.

The vendor's operation manuals are confidential documents controlled by the vendor. Stony Creek is not able to provide this document for public review.

6.28.10 Vestas Setbacks (331, 337)

Setbacks - The safety regulations of the Vestas V90, with a 300-foot rotor span and a total height of 410 feet, tells operators and technicians to stay at least 1,300 feet from operating turbines -- over 3 times its total height -- unless absolutely necessary. Why is Invenergy willing to propose, and the Orangeville Town Board even willing to even consider setbacks that are less than what industry manufacturer recommend as safe for their workers??? (Submittal 331 – Barton, Mary Kay)

And also there was a question about the safety of the wind turbines. I don't remember what the website was. I found a manual for them. If there's one on fire, it's a thirty-four hundred

diameter evacuation so if you have that close to your house, enjoy not living in your house for a while because it's a seventeen hundred foot radius. You go around in a circle. That's thirty four hundred feet. That's what they will rope off and evacuate anything and everything because that's what's recommended in the safety manual that I read online. (Submittal 377 – Clark, Shirl (verbal))

Response: The subject is an older version of a confidential Vestas Manual for the V90 wind turbine. The manual mentions a 400 m (1,312 ft) distance as part of a generic statement that is not linked to icing or any other specific risk. This is a round figure that was likely selected to conservatively bound a wide range of scenarios. This document could be applied to any V90 turbine, installed in any climate, at any location, and in any state of partial completion or operation. The subject Project is not proposing to use V90 wind turbines.

As discussed in DEIS Section 3.14.1, actual experience and studies with turbines operating in northern conditions shows that ice and snow shedding from the turbine occur within 500 feet or less from the turbine base. The Orangeville Town law provides minimum setbacks for roads, property lines, and houses that exceed this safe distance, and therefore it provides an appropriate level of protection and safety from the risk of ice and snow shedding, and the low probability events of blade loss or tower collapse.

Procedures in the unlikely event of a wind turbine fire do not entail evacuations of residences. Actual procedures are discussed in DEIS Section 3.14.5 and FEIS Section 6.28.4.

6.28.11 Tornados (126, 202)

How are the turbines expected to respond to FI, F2 tornados or a microburst? Remember, we had a tornado (that split into two tornados) in the mid 1990's. Who is liable for injuries if they result? (Submittals 126 – Orlowski, Joseph; 202 – Makson, Linda)

Response: As specified in DEIS Table 5, the wind turbines are designed to withstand a maximum wind speed of 117.4 mph (52.5 m/sec).

Tornadoes are categorized by maximum wind speeds as follows[144]:

- An F1, or category 1, 2 or 3, tornado is characterized by 73 – 112 mph winds and is labeled a moderate tornado, resulting in moderate damage. Automobile damage, snapping of trees, destruction of roofs, damage to mobile homes and other outside buildings are typical examples of damage resulting from a F1 tornado.
- An F2, or category 3, 4 or 5, tornado is characterized by 113 – 157 mph winds and is labeled a significant tornado, resulting in significant damage. Residential rooftops are removed, home foundations are shifted, mobile homes are demolished, rail cars are overturned, and trees are uprooted.

A microburst is a very localized column of sinking air, producing damaging divergent and straight-line winds at the surface that are similar to, but distinguishable from, tornadoes, which generally have convergent damage. The scale and suddenness of a microburst makes it a great danger to aircraft due to the low-level wind shear caused by its gust front, with several fatal crashes having been attributed to the phenomenon over the past several decades. A microburst often has high winds that can knock over fully grown trees. They usually last for a couple of

[144] www.tornadoproject.com

seconds. Microbursts are recognized as capable of generating wind speeds higher than 75 m/s (168 mph; 270 km/h).[145]

Based on the design speed of the wind turbines, the project wind turbines should be able to survive an F1 tornado without suffering damage. However, if an F2 tornado or a microburst with unusually high winds were to strike in the Project Area, one or more of the wind turbines would likely be damaged. It is worth noting that if such an unusual wind storm were to strike the area, the winds would create a great deal of damage, not only to the wind turbines. An F2 tornado is capable of shifting home foundations, removing roofs, and uprooting trees.

Table 54 lists the three the tornados that occurred in Wyoming County over the 45-year period between 1950 and 1995. As seen in Table 54 one of these was on F2 tornado that would have wind speeds that would have damaged the proposed wind turbines.

Table 54. Tornados in Wyoming County, NY

Date	Time	Category	Deaths or Injuries
July 7, 1965	4:30 pm	F1	Zero
May 2, 1972	5:30 pm	F2	Zero
May 1, 1991	1:15 pm	F1	Zero

Based on historic records of F2 and greater tornadoes occurring in Wyoming County, the odds of an F2 or greater tornado occurring in the Project Area are relatively low. This low probability, combined with the low population density in the Project Area and the setbacks used in locating turbines from residences, results in a very low risk to public safety from the combination of a tornado and the Project.

6.28.12 Gas Pipeline Setbacks; Grounding System Tests (341)

Section 3.14.3 Lightning Strikes, pp 160-161. The two wind turbines near Dominion Transmission, Inc. (DTI) pipeline are set back at 150 and 400 feet. These structures should be installed further away from the gas line and the ground grid must be tested every year. The ground grid measurements must be sent to DTI and DPS Staff. Set back of 1.5 times the tip height is suggested. DPS has concerns regarding lightning protection near the gas pipe lines. Also, please identify the protocol for checking the effectiveness of its ground grid after lightning occurs. (Submittal 341 – NYS Dept of Public Service)

Operation and maintenance of wind turbines need to consider ongoing maintenance of lightning protection grounding systems. Appropriate setbacks for gas transmission infrastructure should be required. Ongoing testing and replacement of failed grounding components is appropriate mitigation. (Submittal 341 – NYS Dept of Public Service)

Response: Table 55 lists the wind turbines that that are proposed for locations near the Dominion Transmission, Inc (DTI) gas pipeline. No turbines are located in the DTI easement and, as described in DEIS Section 3.14.9, all construction activities at the turbine assembly area, including foundation excavation, can be done without entering the DTI easement area. As further noted in the DEIS, Stony Creek will coordinate activities near the pipeline with DTI.

[145] http://en.wikipedia.org/wiki/Microburst

Stony Creek will notify DTI several months in advance to coordinate construction designs, and shortly before actual construction around the DTI pipeline so that DTI can arrange to have an observer at the site during construction.

Notably, in 2008 four wind turbines were installed in the Town of Sheldon at distances of 120 ft, 160 ft, 450 ft, and 470 ft from this same DTI pipeline, with no issues. Construction was coordinated with DTI as is proposed for Stony Creek.

Table 55. WTG Near DTI Gas Pipeline

WTG ID – FEIS	Public Road Accessed From	Distance to Gas Pipeline
T-48	Quakertown Road	133 ft
T-45	Orangeville Center Road	171 ft
T-42	Almeter Road	467 ft

The questions of lightning strikes affecting the protection of gas pipeline cathodic protection systems has been studied by performance of "Ground Potential Rise (GPR)" analyses to evaluate how quickly voltage, captured by a lighting strike and transferred to the ground via the turbines lightning protection system, would dissipate with distance from the turbine. Results of the GPR study show that the GPR levels near the wind turbine are well below the typical allowable levels for gas pipeline coatings.

Stony Creek will perform annual tests of the grounding system for any Wind Turbine installed at a location within 600 ft of a natural gas transmission pipeline. If testing finds the grounding system performance has degraded in such a way that it could risk the cathodic protection system of the DTI gas pipeline, Stony Creek will repair the grounding system or take other appropriate actions to ensure protection of the gas pipeline.

6.28.13 Snow and Ice Shedding (001, 020, 028, 082, 104, 149, 164, 308, 312, 264, 231, 242, 337)

With documented evidence that wind turbines can create ice throws of more than 1,500 feet, all turbines should be located at least this distance / setback from a public roadway for the health, safety and welfare of the public. Many of the proposed turbine sites are located closer than 1,000 feet from a public roadway and as the DEIS states many are close to snowmobile trails. Has this dangerous situation been studied anywhere in this process other than the data that the manufacturer provides (GE)? Who would be liable should someone be injured if ice throw or blade throw should occur? This should be explained in the DEIS. A report of vehicular damage has been reported to the Wyoming County Sheriff for a turbine ice throw incident that occurred on Whethersfield Rd. See attached reference material regarding Wind Turbine Ice Throw and public safety. (Attachment: C.M. Lawton letter, 4 pp.; Gordon calculation sheet, 3 pp.) (Submittals 001 - Humphrey, Peter; 020 – Raab, Sherri; 028 – Chortie, Alan; 082 – Burgio, Helene; 104 – Dylag, M.; 149 – Dickinson, Darryl; 164 – Dickinson, Mary; 308 – Davis, Barbara; 312 – Wilkinson, Nyla; 264 – Moultrup, Steven; 231 – Nevinger, Mary; 242 – Nevinger, James)

Project will accept ice throw. (Submittal 337 – Ramsey, Gerald and Donna)

Response: DEIS Section 3.14.1 describes the occurrence of snow and ice on wind turbines and safe setback distances for snow and ice shedding. The commenter has not provided documentation of wind turbine ice throws commonly occurring at distances of 1,500 ft. The

"evidence" provided as an attachment to the comment is a 2004 letter regarding theoretical calculations on maximum distances a blade or piece of ice could be "thrown" and relies on assumptions including zero air resistance. None of the information in the letter is actual "evidence" of real world experience with ice or blades being thrown thousands of feet from a wind turbine. The information in the DEIS on distances that ice snow could be shed from wind turbines is based on experience of wind farm operators in cold climates in upstate New York. Notably, since the publication of the DEIS, the High Sheldon Wind Farm operated 75 turbines through the 2009-2011 winter season with no reports of damage or injury due to ice or snow shedding.

The Wyoming County Sheriff's Office was contacted on November 12, 2010 to better understand the report of vehicle damage reported by the commenter. The Sherriff's office did not recall any such incident of damage to a vehicle due to ice from a wind turbine. The office noted that the event identified was in the Noble Wethersfield wind project and also searched the report database for Noble's name. The office was unable to find a report of a vehicle damaged by ice from a wind turbine.

As described in the DEIS, a setback of 500 ft has been found to be a safe distance for mitigating risk of ice and snow shedding from a wind turbine.

Table 56 lists the turbines that are nearest to roads. Because the turbines, except T-28, are all greater than 500 ft from roads, the turbines will not pose a great danger to the public as is suggested by the comment.

Turbine T-28 is proposed to be approximately 200 feet from Bantam Road, a seasonal use dirt road that is not open in winter months. As discussed in DEIS Sections 1.3.4 and 13.14.1, Stony Creek has requested a variance to allow this turbine to be located closer to Bantam Road than is allowed by standard Town law setbacks. There is little or no increase in risk to the public by granting this variance. Because Bantam Road is not maintained in the winter, there should be no or extremely little times when traffic is on Bantam Road during times when show or ice could be falling from turbine T-28.

Table 56. WTG Near Public Roads

WTG (FEIS ID)	Distance to Road	Tip Height Ratio (426 ft)	Nearest Public Road
T-28	191	0.4x	Bantam Rd
T-13	640	1.5x	Nesbitt Rd
T-12	651	1.5x	Nesbitt Rd
T-9	703	1.7x	Nesbitt Rd
T-27	778	1.8x	State Route 238
T-11	781	1.8x	Nesbitt Rd
T-8	800	1.9x	Nesbitt Rd
T-25	809	1.9x	Old Buffalo Rd
T-51	863	2.0x	Orangeville Center Rd
T-37	891	2.1x	Centerline Rd
T-10	936	2.2x	Nesbitt Rd
T-47	944	2.2x	Wilder Rd
T-32	962	2.3x	US Route 20A W

Notes:

1. Distance to road is measured from the center of the proposed turbine location to the edge of the road right of way. Edge of right of way is determined using road centerlines provided in GIS datasets and assumed right of way width. State highways NYS 20A and NYS 238 are assumed to have right of way widths of 4 rods (4 rod x 16.5 ft/rod = 66 feet). All public roads are assumed to have a right of way widths of 3 rods (3 rod x 16.5 ft/rod = 49.5 feet)

2. This table shows all turbine locations that are a distance of 1,000 feet or less from public roads.

Table 57 list the turbines that are nearest to the current routes of snowmobile trails. Four turbines would be within 500 ft of these snowmobile routes. As stated in DEIS Section 3.14.1, for any WTG located within 500 ft of a snowmobile trail Stony Creek will maintain signs warning snowmobile trail users of potential snow and ice shedding. The signs will be located at points approximately 500 feet from the wind turbine, and Stony Creek will confer annually with the local snowmobile club to learn of any changes in snowmobile routes that might result in the trail being within 500 feet of a Stony Creek wind turbine.

Table 57. WTG Near Snowmobile Trails

WTG (FEIS ID)	Distance to Snowmobile Trail	Tip Height Ratio (426 ft)
T-55	131 ft	0.3x
T-58	227 ft	0.5x
T-42	359 ft	0.8x
T-57	500 ft	1.2x
T-56	696 ft	1.6x
T-52	959 ft	2.25x

Notes:

1. Snowmobile trail routes are based on information obtained from the local snowmobile club in 2009.

2. This table shows all turbine locations that are a distance of 1,000 feet or less from a mapped snowmobile trail.

6.28.14 GE Snow and Ice Setbacks (291)

Please address the 700 foot setback from public roads and property lines in the context of the suggestion from GE (which references recommendations from certifying agency Germanischer Lloyd) that setbacks be 1.5(H + D), where H is the tower height and D is the rotor diameter, in climates where snow and ice shedding may occur. In the case of the GE 1.5 or 1.6 XLE models, this guideline would indicate an 800 foot setback. [Ice Shedding and Ice Throw - Risk and Mitigation, GER-4262, David Wahl and Philippe Giguere, Wind Application Engineering, GE Energy, Greenville, SC, April 2006]. (Submittal 291 – Stantec)*

Response: The formula stated in the reference document is the same formula presented in DEIS Section 3.14.1. This formula was apparently first suggested in a paper in 2000 as a tentative guide to test out for validity. Actual data and operating experience show that this formula results in a safe setback distance that is larger than necessary. As discussed in DEIS Section 3.14.1 and FEIS Section 6.28.13 a setback of 500 ft provides appropriate protection from the risk of ice and show shedding.

The referenced document identifies the 1.5*(D+H) formula as a possible guideline to use for locating turbines from public roads, occupied structures, and public areas. It does not suggest that this be used for property line setbacks.

6.28.15 Setback Comparison Table (334)

The DEIS fails to adequately articulate social equity issues raised during the scoping process. Some in the Township have already expressed concern over setbacks – the minimum distance between a proposed turbine and the nearest dwelling. Since the value chosen for this distance is important to many residents, it would be helpful for the DEIS to summarize the proposed setback relative to common practice in other locales. An example format is suggested below: (Submittal 334 – Bassett, David)

Table of Comparative Setback Distances						
	Distance in Feet			As Measured to the Nearest		
Jurisdiction/Scale	Minimum	Typical	Avg	Dwelling	Building	Property Line
This DEIS						
Nearby wind farms (Bliss, etc.)						
Western NY					Check as appropriate	
NY state-wide						
National						
Europe						

Response: DEIS Table 41 provides minimum setback requirements in New York Towns that have operating wind farms. There are no broad standards that apply to Western NY, all of New York, the United State, all of Europe.

6.28.16 Gas Wells (291)

Given the statement in the text that "Potential impacts and mitigations to protect gas wells, [whether] active or capped, [are] the same as for gas pipelines", Stony Creek should verify whether the reported capped gas well is located within 100 feet of any proposed work area. (Submittal 291 – Stantec)

Response: Table 58 lists all oil or gas wells in the Town of Orangeville and the distance between each well and the nearest proposed WTG location. The Krotz Road well mentioned in the DEIS is API Well No. 3112.118626.0000 and is listed in Table 58. Distances in Table 58 are calculated using the locations of wind turbines in the FEIS layout and the dimensions of the GE 1.6-100 wind turbine.

Table 58. Oil or Gas Wells and Distances to Nearest WTG

API Well No.	Surface Longitude / Latitude	Well Location – Owner, Nearest Road	Nearest WTG (FEIS ID)	Well to Turbine Distance	Tip Height Ratio (426 ft)	Status	Nearby Work Areas
102284	-78.28107 42.76519	Dobo Snyder Road	T-4	3,276 ft	7.7x	Plugged, abandoned	None
104392	-78.19754 42.74772	Werner NYS Rt. 238	T-32	1,798 ft	4.2x	Plugged, abandoned	None
105214	-78.25291 42.77327	Fontaine Old Buffalo Rd.	T-5	3,634 ft	8.5x	Permit expired	None
110935	-78.28522 42.77825	Compton Gassman Rd.	T-2	414 ft	1.0x	Plugged, abandoned	T-2 assembly area.
118588	-78.24460 42.72630	Ahl Orangeville Center Rd.	T-54	161ft	0.4x	Plugged, abandoned	T-54 assembly area, road.

API Well No.	Surface Longitude / Latitude	Well Location – Owner, Nearest Road	Nearest WTG (FEIS ID)	Well to Turbine Distance	Tip Height Ratio (426 ft)	Status	Nearby Work Areas
118590	-78.29039 42.70298	Kirsch Hollow Rd.	T-41	5,040 ft	11.8x	Plugged, abandoned	None
118626	-78.22194 42.75245	Tiede Krotz Rd.	T-19	814 ft	1.9x	Plugged, abandoned	T-19 road
119938	-78.20028 42.73251	Abenchein Hermitage Rd.	T-32	4,128 ft	9.7x	Plugged, abandoned	None

Notes:

1. Well locations are from the on-line oil and gas database managed by New York State's Department of Environmental Conservation Division of Mineral Resources who administers regulations and a permitting program for oil and gas wells. This searchable database provides information on well types, locations and depths, permitting and drilling history, among other things.

2. This table shows all wells in the Town of Orangeville, as represented in a November 16, 2010 search of the database identified in Note 1.

3. For brevity, the API well numbers shown in the table do not include the first four digits and the final four digits, which for all wells listed in the table are "3112" and "0000", respectively.

4. The permit for well 3112.105214.0000 that is listed as expired permit was issued May 1967.

As shown by the Table 58, there are no active gas wells in the Town of Orangeville. There are seven abandoned gas wells and one well from 1967 that is identified as having an "expired permit." Three of the abandoned gas wells are near proposed Stony Creek work areas. Specifics on these three abandoned wells are:

- Well near T-2. (API#3112.110935.0000). According to the DEC, this well was a "dry wildcat" that was plugged and abandoned on November 4, 1974 – approximately 36 years ago. A wetland (W-173) exists between the turbine foundation location and the abandoned wellhead. By avoiding the wetland areas near T-2, construction activities will be maintained a distance of 300 feet or more from the abandoned wellhead. Because this well is plugged and abandoned, and further because activities be occurring several hundred feet from the abandoned wellhead, there is no risk to performing construction in the areas proposed for the Project.

- Well near T-54. (API#3112.118588.0000) According to the DEC, this well was a "dry hole" that was plugged and abandoned on October 19, 1984 – approximately 26 years ago. The abandoned wellhead is west of the proposed location for T-54 and it is in line with the preferred route for the access road to this turbine. Because this well does not produce gas and because it is plugged, there is no risk to performing construction in the vicinity of the abandoned wellhead.

- Well near access road leading to T-19. (API#3112.118626.0000) According to the DEC, this well was a "dry hole" that was plugged and abandoned on October 18, 1984 – approximately 26 years ago. The abandoned wellhead is located adjacent and south of the access road that leads to T-19. Stony Creek has routed the access road to follow an existing access road. In the area of the gas wellhead, Stony Creek has routed the access road to avoid the gas well. Because this well does not produce gas and because it is plugged, there is no risk to performing construction in the vicinity of the abandoned wellhead.

6.28.17 Private Airplane Landing Strips (016, 017)

What impact is expected on small / recreational aircraft? The attached map from the DEIS does not include the private airfield on Liberty St. on the border of the Towns of Orangeville and Warsaw. Turbines number 57, 58 and 59 will create a safety issue for those that use this airfield. The proposed site of these turbines is in the glide path of the runway.

This was not addressed in the DEIS that was submitted to the Town of Orangeville (Lead Agency) for the Stony Creek Wind Farm. The 400 foot wind towers will cause a significant impediment to aircraft arriving and departing the airfield on Liberty St.

How can this health and safety issue be mitigated? The above mentioned airfield has been in operation for many years. (Attachment: Map – Distance to Airports…1 pp.) (Submittal 016 – Rood, Reo)

What impact is expected on small / recreational aircraft? The attached map from the DEIS does not include the private airfield on Merkel Rd. in the Town of Attica. Turbines number 1, 2 and 3 will create a safety issue for those that use this airfield. The proposed site of these turbines is in the glide path of the runway.

This was not addressed in the DEIS that was submitted to the Town of Orangeville (Lead Agency) for the Stony Creek Wind Farm. The 400 foot wind towers at the top of Cobble Hill will cause a significant impediment to aircraft arriving and departing the airfield on Merkel Rd.

How can this health and safety issue be mitigated? The above mentioned airfield has been in operation for many years. (Submittal 017 – Rohanen, James)

Response: DEIS Section 3.14.12 addressed impacts of the Project to aviation safety, including potential impacts to private airfields that are registered with the FAA or independently reported to airnav.com, a voluntary internet listing of airfields.

The Liberty Street airfield described in the comment is shown in Figure 25. It is located outside of and east of the Project Area. It is apparently not registered with the FAA or www.airnav.com. As shown in Figure 25, the runway runs in an east-west orientation. The nearest turbine from the end of the runway would be T-59, which is approximately 1.1 mile away and not directly in line with the runway. Turbine T-57 is more directly in line with the runway; it is 1.5 miles away from the end of the runway. Because the turbines are over 1 mile away, use of this private airstrip should not be significantly affected by the Project.

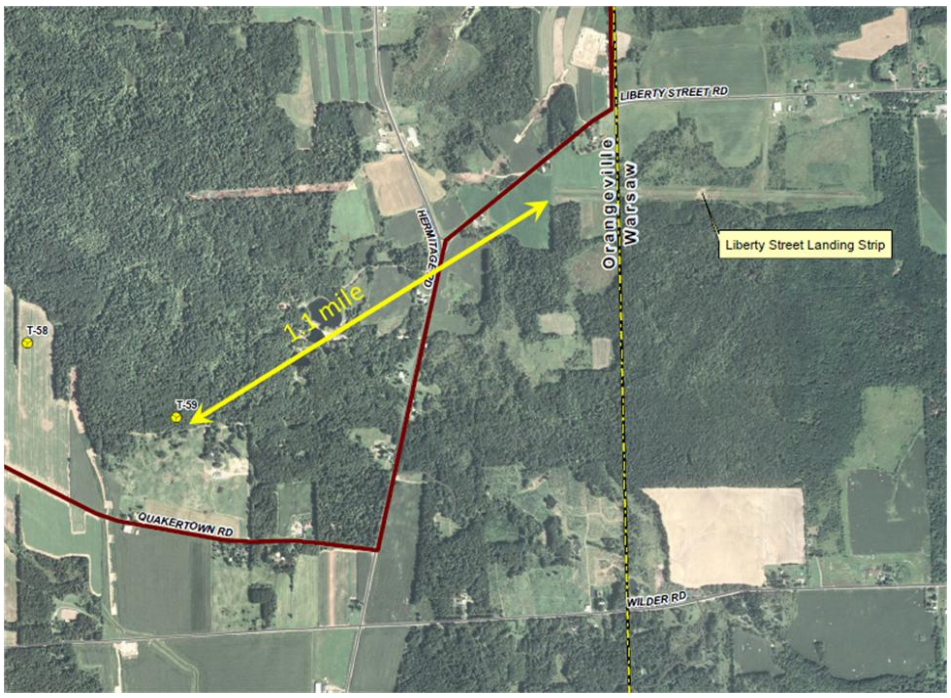

Figure 25. Liberty Street Landing Strip

The Merkel Road airfield described in the comment is shown in Figure 26. It is located outside of and north the Project Area. It is apparently not registered with the FAA or www.airnav.com. As shown in Figure 26, the runway runs in a north-south orientation. The nearest turbine from the end of the runway would be T-1, which is approximately 0.9 miles away and not directly in line with the runway. There are no turbines directly in line with this runway. Because no turbines are directly in line with this private airstrip, its use should not be significantly affected.

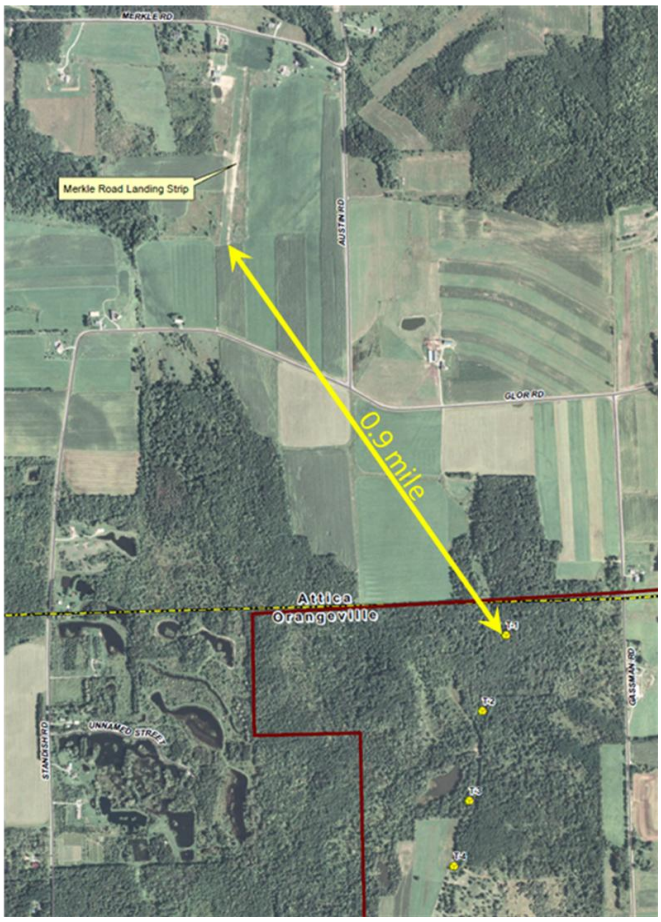

Figure 26. Merkle Street Landing Strip

6.28.18 Mercy Flight (341)

Mercy Flight – Page 168. Please provide any written documentation in the FEIS with respect to consultations regarding turbine heights and Mercy Flights. It is recommended that Stony Creek Energy consult directly with the organization. (Submittal 341 – NYS Dept of Public Service)

Response: In the past, as part of the discussions about proposed wind turbine projects in the Towns of Perry and Sheldon in Wyoming County, Mercy Flight has been consulted on operations around wind farms.

As requested by the commenter, on November 16, 2010 Stony Creek contacted the Western New York Office of Mercy Flight and spoke to lead pilot Stan Snopkowski about potential impacts of turbines at the Stony Creek Wind Farm on Mercy Flight operations. A memorandum documenting this discussion is provided in FEIS Appendix B.c.

As described in the memorandum, Mr. Snopkowski stated wind turbines are no different than water towers or other obstructions, and there are wind farms in existence within Mercy Flight's area of operation that don't pose a problem.

6.28.19 Editorial (291)

References to Map 17 should be to Map 18. (Submittal 291 – Stantec)

Response: Comment noted, the map reference in the DEIS was incorrect and should have cited Map 18.

6.28.20 Protocols to Minimize Risk (339)

Executive Summary, page xxxiii [actually page xxxi] – Public Safety. Please explain the different response protocols and Best management Practices that minimize the risks. (Submittal 341 – NYS Dept of Public Service)

Response: The body of the DEIS, specifically DEIS Section 3.14, describes the many of the protocols to minimize risk that are mentioned in the executive summary sentence referred to by the commenter. Examples are:

- Operations procedures for snow and ice buildup (DEIS 3.14.1)
- Fencing and signage to prevent unauthorized access to construction areas (DEIS 3.14.4)
- Remote monitoring of wind turbines (DEIS 3.14.5)
- Coordination with local emergency responders (DEIS 3.14.5)
- Procedure for a turbine fire (DEIS 3.14.5)
- Worker communication (DEIS 3.14.6)
- Coordination with gas pipeline companies (DEIS 3.14.9)
- Dig Safely NY (DEIS 3.14.9 and 3.14.10)
- Fencing to prevent unintended access into gas pipeline easements (DEIS 3.14.9)

6.28.21 Safety Inspectors (339)

Will Orangeville be hiring inspectors to make sure residents are safe or will you leave it in the hands of Invenergy? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: The DEIS and FEIS contains mitigations to address various concerns and to ensure the Project can be built and operated in a safe manner. The Town will employ an engineering firm during construction to ensure Stony Creek adheres to the requirements and conditions of any special use permits that may be issued.

6.29 Blasting and Seismic Issues

6.29.1 Geotechnical Information (280)

The DEIS Scope Section 3.15 Blasting and Seismic Issues indicates under "Characterization" that the DEIS will describe "Relevant geotechnical information." The DEIS only mentions the depth to bedrock and that in consists of weathered shale based upon the neighboring High Sheldon Wind Farm. No additional geotechnical information is provided. Could you please provide relevant geotechnical information other than just the depth to bedrock and type of bedrock? Is there site specific geotechnical information? (Submittal 280 – Core Environmental)

Response: The DEIS included geotechnical data at a level of detail sufficient to identify the potential for significant effects. Site-specific geotechnical information will be gathered at proposed turbine sites if the project is approved, and before construction, for use in designing turbine foundations.

6.29.2 WTG Fall Zone (280)

The DEIS Scope Section 3.15 Blasting and Seismic Issues indicates under "Mitigation" the DEIS indicates it will include the "Identification of WTG fall zones." The DEIS does not to identify these zones. Could you please provide the identification of WTG fall zones? (Submittal 280 – Core Environmental)

Response: DEIS Section 3.15 states that “In the extremely unlikely event of WTG collapse from an earthquake, WTG would in all likelihood fall within its tip height, or approximately 400 feet.” The WTG fall zone is assumed to be a circle with radius equal to 1.0 x the turbine tip height and centered at the base of the wind turbine tower. For the 1.6-100 wind turbine, this is a distance of approximately 430 feet.

6.29.3 Blasting Near Water Wells (123, 298)

In several public work sessions Invenergy indicated blasting would not be used to construct wind turbine foundations. In the DEIS reports that blasting will be used as necessary. It is further stated that each turbine is at least 1500 feet [incorrect citation] from the nearest nonparticipating residence and therefore should not be any significant blasting-related impacts on water wells, foundations, septic systems, or other subsurface structures." While accurate for foundations and septic systems as they are immediately adjacent to the residences, it is not always accurate for water wells! Additionally, the immediate blasting site could in fact be over or adjacent to geological formations affecting the conveyance of water to other locations. This reflects the lack of understanding on this issue or the point is being avoided.

Therefore, protection should be in place to safe guard ground water potable water systems. If they fail in a close timeline from construction when they have a long track record of performance the conclusion is straight forward.

All well are not immediately adjacent to the residence, thus potentially placing wind turbines closer then the 1500 feet stated [incorrect citation]. This may be yet another reason to support a minimum of 1500-feet minimum distance from neighboring property lines. This distance would reduce further the potential for negative impacts resulting from excavation for wind turbine foundation placement.

While the wind energy company and the Town of Orangeville may think this to be minor it is a very important resource and adds real value to any property to have a reliable water source. (Submittal 123 – Orlowski, Joseph; 298 – Ramsey, Gerald and Donna)

Response: The need for blasting is not anticipated, but it cannot be ruled out at this time. The DEIS notes :

> "Based on a preliminary geotechnical review of the proposed Project site, blasting is unlikely to be required for the construction of the WTG foundations. The shales and siltstones present on site are characterized as fractured and fissile (easily split along close parallel lines), and if encountered can be removed by mechanical methods (i.e., excavation). Based on experience in building within the same rock formations (i.e., High Sheldon Wind Farm) no blasting is expected to be required."

Further, the DEIS states:

> "In the unlikely event that blasting is required, blasting activities will be conducted in accordance with the Blasting Plan provided in DEIS Appendix I, by a blasting contractor certified by New York State, and in compliance with all applicable Federal and regional requirements."

Analyses summarized in the DEIS concluded that construction activities like those proposed by Stony Creek are unlikely to affect wells more than 500 feet away. No WTG locations are proposed within 500 feet of any residences. In accordance with the Orangeville zoning code, turbine locations maintain a minimum setback of approximately 1,320 feet between the tower center and the nearest non-participating dwelling (presumably any wells on these properties would be close (within approximately 50 feet) to the dwellings), and turbine locations maintain a minimum setback of 700 feet from the boundary lines of parcels owned by non-participating landowners.

Stony Creek should be notified promptly of any claims of damage to wells or ponds. Complainants are encouraged to utilize the Complaint Resolution Plan (DEIS Appendix I.2). Because effects to wells over 500 feet away from turbine sites are not anticipated, no fund or bond has been established.

Lastly, it should be noted that 75 wind turbine foundations were constructed in the neighboring town of Sheldon with no reports of turbine construction or operation affecting any drinking water wells. And some of the turbines in Sheldon are built under 1,000 feet from participating residences and presumably even closer to wells.

6.29.4 Blast Vibration Levels (291)

P. 170, para. Given that the closest dwelling is 870 feet away from a WTG, comparisons to guidelines should refer to this distance, or to the 700 foot setback from property lines and roads. Or show how the 500 foot setback from water wells was selected, and show that this distance is protective of structures and roads as well. See (2). (Submittal 291 – Stantec)

Response: The subject paragraph in the DEIS described typical vibration levels at 1,000 feet and 2,000 feet away from a blasting conducted with a 9 lb charge inserted in 2-inch diameter holes and 8 feet deep. Ground vibration levels would depend on the design of the blasting program and distance from the blast. If blasting is required for a location where a residence is less than 1,000 feet away from the blasting site, Stony Creek will plan the blasting so that

ground level vibrations will be 4 mm/sec at the nearest residence to the blasting site. This level of vibration is three times less than the levels of 12.7 mm/sec that are cited in the DEIS as the threshold where structures may be affected by blasting.

The DEIS points out that studies conclude blast vibration levels below 25 mm/sec have no permanent adverse effects on nearby water wells. If blasting is necessary to construct the Project, Stony Creek will design the blasts so that vibration levels are less than 25 mm/sec at any non-participating residences.

Selection of the 500 ft setback from wells is discussed in FEIS Section 6.29.5.

6.29.5 500 Foot Well Setback (291)

How was the 500 foot setback from water wells arrived at? (Submittal 291 – Stantec)

Response: The 500 foot setback from water wells was set by the Genesee/Fingerlakes Wellhead Protection (page III-1). [146] This study states that this distance was set by taking into account buffers of 200 feet that were set by the NYSDEC and the NYS Department of Health as necessary to prevent against microbiological contamination and taking into account the well cone of influence as appropriate.

6.29.6 Blasting Near Gas Pipelines (341)

3.1 5 Blasting and Seismic Issues - pp. 169 – 171. The applicant should directly work with DTI to determine pipeline distance and notification prior to any blasting activity. This information and the applicant's proposed actions should be reflected in the FEIS. Normally blasting issues are handled through the Part 753 ("Dig Safe") preconstruction meeting notifications and preconstruction notices. (Submittal 341 – NYS Dept of Public Service)

Response: Stony Creek will not use blasting to excavate for the two turbine foundations closest to the DTI gas pipeline, i.e., the foundations for the turbines at the locations identified in the FEIS as T-42, T-45 and T-48. Also see FEIS Section 6.28.12 regarding notification of DTI prior to construction activities near gas pipelines.

6.29.7 Earthen Dam (336)

The DEIS states "The geotechnical review of the proposed Project site indicates that blasting is unlikely to be required. However, if blasting is required, the DEIS goes on to say

> *"Blasting operations adjacent to residences, buildings, structures, utilities, and other facilities shall be carefully planned with full consideration for all forces and conditions involved. The minimum amount of blasting material shall be used to effectively fracture the competent rock for the excavation depth".*

The DEIS needs to assess and mitigate the potential impact that blasting will have on this earthen dam holding back 8 million gallons of water. This DEIS needs to properly assess and mitigate the potential impact of seismic activity, caused by the stress of turbines, on my earthen dam. The current DEIS does not properly address either issue.

[146] GFLRPC, December 1998.

Therefore, I would request that the Town Board include in the DEIS more specific studies on these two issues to determine the potential impact of the project on the structural integrity of my earthen pond dam and if such impact is found to be significant or probable, then mitigation and/or elimination of these turbine sites needs to be seriously considered. (Submittal 336 – Humphrey, Peter)

Response: Potential vibrations from blasting and the subject earthen dam are addressed in DEIS Section 3.15.1.

The comment refers to an approximately 5-acre man-made pond that was constructed by the owner. As shown in Figure 27, the pond appears to be created by construction of an earthen dam approximately 1,000 ft long and up to 100 ft wide and involving a significant amount of earthmoving and grading. If the dam is 6 ft tall on average, it represents an earth mass of approximately 25,000 tons.

The nearest turbine foundations are proposed for locations approximately 1,400 ft and 1,500 ft from the nearest points of the earthen dam.

Operation of wind turbines does not generate noticeable vibrations in the ground. There is no reason to expect that operation of wind turbines would affect a 25,000-ton earthen dam located ¼ mile or more away.

If blasting were needed to construct foundations for the two nearest turbines, the blasts would generate low level vibrations in the vicinity of the blast, and these vibrations would be even lower at the location of the earthen dam. As documented in DEIS Section 3.15.1, at 1,000 ft away from the source of the blast, vibrations would likely be on the order of 1 to 3 mm/sec. Studies referenced in the DEIS conclude that blasting vibrations up to 50.8 mm/sec should not damage a structure. It is reasonable to assume that a 25,000-ton earthen dam is able to withstand the same vibrations that a building can withstand, if not more. Therefore, blasting from the two proposed turbines could cause vibrations at the dam, but these are estimated to be 17 times less than the levels at which damage could result to the dam. A factor of safety of 17 is sufficient margin to reasonably protect the dam and the pond.

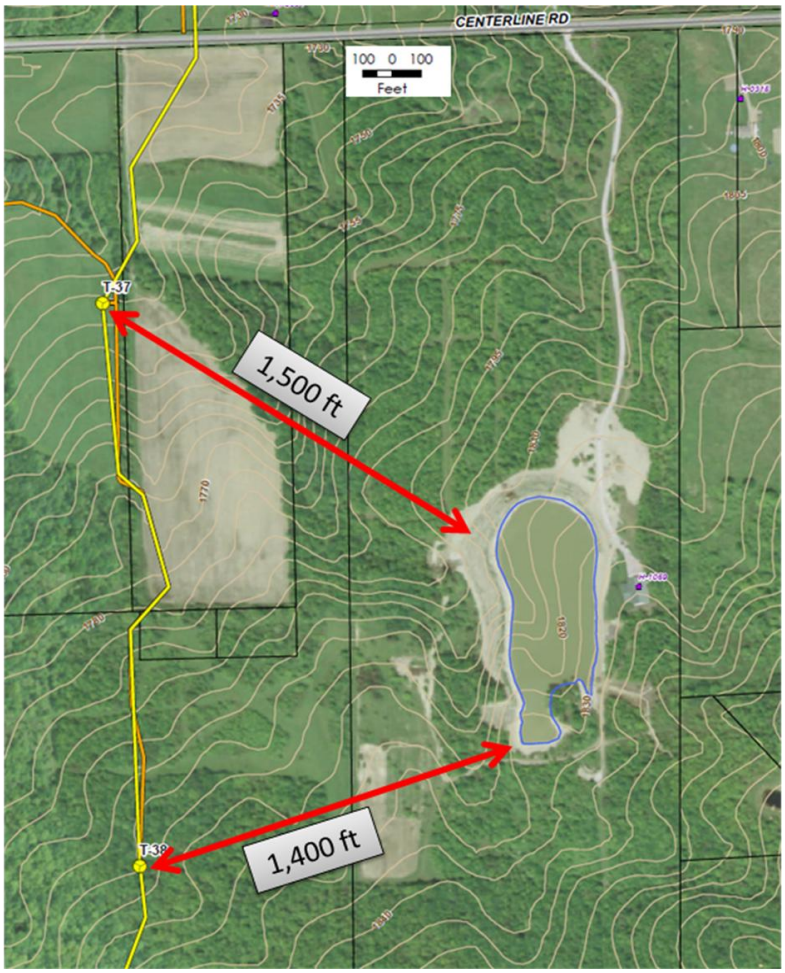

Figure 27. Earth Dam Location Map

6.29.8 Risk of Earthquake (200)

Additionally, the most recent devastating earth quakes half a world away makes me suggest that the Clarendon-Linden Fault line IS a potential for earthquake activity in this region. Some scientists suggest it is not a matter of 'if but when'.

New York State, beginning in NYC is ripe (although previously rare) for activity based on the earth shift just this year with the Haiti, Chilean, and Taiwan earthquakes and just in early April the Mexico/California border. We may not experience the magnitude of the most recent one in California/Mexico or Haiti, Chile or Taiwan, earthquakes but a series of smaller quakes can have the same cumulative devastating effect.

Although this region is not as seismically active as other areas of eastern Canada such as the St Lawrence Valley, it still experiences numerous small earthquakes such as those in Lake Ontario, Lake Erie and Georgian Bay as shown in the enclosed seismicity map.

Looking at the fault line, one can readily identify the potential we have here in Western New York for another major earthquake like the Attica earthquake in 1928, and in May 1995 (5.6 on the Richter scale).

California currently has under way a study of how to make a wind turbine earthquake proof'. They have developed a tower that is built in sections thus allowing for a section to fall at a time, not the entire 450 foot tower. Bottom line is if you are going to erect turbines in a seismic impact zone, you need to design accordingly or avoid the area.

Haiti, Chile, and Taiwan, have not experienced earthquakes for decades and even centuries. Suddenly they are the victims of devastating and deadly quakes; perhaps they became a bit complacent much like we have in Western New York. After all 'it can't happen here' or can it? (Submittal 200 – Makson, Paul and Linda)

California is working on a collapsible turbine tower if/when an earthquake occurs. Does Invenergy plan on using the same collapsible tower for the Stony Creek wind project? (Submittal 201 – Makson, Paul and Linda)

Response: DEIS Section 3.15.2 addresses the potential for seismic activity in the region, and FEIS Section 6.29.9 addresses seismic design.

Chile is an active seismic area; there have been 8 earthquakes registering over 6.2 on the Richter Scale in the period 2005-2010.[147] Taiwan is similarly in a high seismic activity zone,[148] and "the Haitian half of the island of Hispaniola sits sandwiched between two fault lines on the divide between the North American tectonic plate and the Caribbean plate.[149] Conversely, seismic risk in the Project Area is relatively low relative to other parts of the United States and the world. Figure 28 shows a map of the U.S. divided into seismic zones – zones used to determine the level of earthquake that should be assumed when designing structures. Seismic zones are set based on earthquake history around the country and range from seismic zone 0 for areas with the lowest risk to seismic zone 4 for areas with highest risk. The Project Area is in seismic zone 1. Wind turbines operate successfully in higher seismic zones, including many wind turbines that are operating in seismic zone in California.

In Wyoming County, New York, where over 200 wind turbines now operate, earthquakes and tremors have occurred with no problems for the operating wind turbines. On June 23, 2010, earthquake tremors were felt in Wyoming County from a magnitude 5.5 earthquake that occurred about 33 miles northeast of Ottawa. On June 56, 2009, a local earthquake in Attica was reported to have a magnitude of 2.9.[150] Wind turbines operated successfully through both of these events.

Stony Creek does not propose use of collapsible towers as described by the commenter.

[147] *See* Iris Bieri, Earthquakes in Chile ("Chile has . . . a long history of earthquakes and volcanoes."), at http://www.earlham.edu/~bieriir/earthquakes/.

[148] Taiwan Central Weather Bureau, Earthquake Cycles (Taiwan has "a high frequency of earthquakes;" "earthquake occurrence is normal in a seismic zone like Taiwan."), at http://www.cwb.gov.tw/V6e/seismic/About_EQperiod.htm#main001.

[149] MercoPress, "Haiti sits on two seismic fault lines and a major disaster was expected," Jan. 15, 2010, at http://en.mercopress.com/2010/01/15/haiti-sits-on-two-seismic-fault-lines-and-a-major-disaster-was-expected

[150] Batavia Daily News, "Update: Tremors from Canadian Quake Felt Locally," June 24, 2010 and updated July 8, 2010.

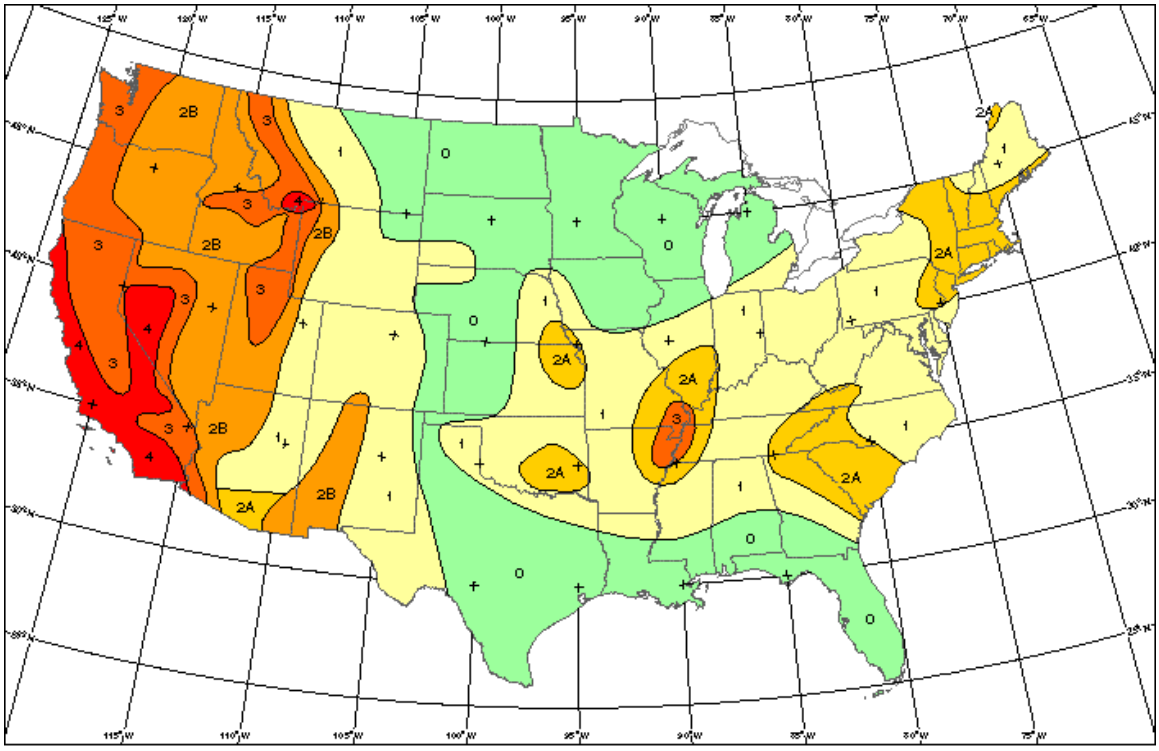

Figure A7. 1994 Uniform Building Code zone map. Zones are identified by the numbers from 0 to 4. Seismic zone factors are assigned to each zone; Zone 0 = 0, Zone1 = 0.075, Zone 2A = 0.15, Zone 2B = 0.20, Zone 3 = 0.3, and Zone 4 = 0.4. Each zone also has specific structural detailing requirements. After ICBO, 1994 (This map was redrawn from the original source, if differences occur, the original source should be used).

Figure 28. U.S. Seismic Zones

6.29.9 Seismic Design (280)

The DEIS Section .3.15.2 Seismicity indicates under "Existing Conditions" (page 171) that:

> *"the Project Area is located within the Clarendon-Linden Fault system. This system crosses through the center of Wyoming County and has been known to have occasional but infrequent seismic activity. This system consists of three major faults that strike to the northeast, with two shorter strands near Attica that also strike northeast."*

The section continues with:

> *"In 1929, an earthquake with a magnitude of 5.2 occurred in the Attica, New York."*

In the "Impacts" section the DEIS states that:

> *"the risk of a tower collapse from ground shaking, fault rupture, slope instability and liquefaction are minimal. The WTG and its base are designed to withstand major structural stresses, including seismic activity."*

What magnitude earth quake are the WTGs designed to withstand? Does the manufacturer recommend the use of the proposed WTGs on a fault line, or do they recommend reinforced

towers, or reinforced foundations? What are the manufacturers' recommendations on the seismically active nature of the Project Area and their product? (Submittal 280 – Core Environmental)

The DEIS Scope Section 3.15 Blasting and Seismic Issues indicates under "Mitigation" the DEIS indicates it will "Design of all project elements for loading due to seismic events." However, the DEIS does not indicate that the WTG's have been designed in this manner. Could you please provide the documentation that the design of all project elements for loading due to seismic events has been completed? (Submittal 280 – Core Environmental)

Response: As discussed in FEIS Section 6.29.9, modern wind turbines have been installed in a range of areas that experience seismic activity, including western New York.

Wind turbines are designed to withstand a variety of loading conditions, including seismic loads. However, these design loads are not expressed in terms of an earthquake "magnitude." Stony Creek will ensure the wind turbines installed in the Project have the appropriate seismic design rating for the relatively low seismic zone in which the Project Area exists.

As part of the detail design and certification of the Project, a structural engineer will review soil conditions and New York State building codes that specify the earthquake loads that should be used for structures in the Project Area. The structural engineer will design the foundation to withstand all loading conditions specified by the building codes, including seismic loads. Satisfaction of these design requirements will be indicated by a professional engineering stamp on the wind turbine foundation drawings.

6.29.10 Earthquakes Caused by Turbines (218, 300, 336)

No studies have been done on what effect (and how large) the vibration into the ground will be from the spinning blades. A 4 (four) foot tall lawn turbine reportedly drives moles from the ground. What about the underground aquifers? fault lines? Can this collapse the water table? How about stimulate an earthquake? (Submittals 218 – Miller, Elizabeth; 300 – Ramsey, Donna)

My first concern is the seismic sensitivity of this area is well known. A magnitude 4.7 disturbance on January 1, 1966 caused slight damage to chimneys and walls at Attica and Varysburg. Plaster fell at the Attica State Prison. The total felt area was about 46,500 square kilometers.

Wind turbines can affect seismic activity and in turn be affected by seismic activity: "The analysis of wind turbines loading associated with earthquakes is clearly important when designing for and assessing the feasibility of wind farms in seismically active regions. The approach taken for such analysis is generally based on certified methods which have been developed for the assessment of seismic loads active on buildings. These methods are not able to deal properly with the aerostatic interaction of the dynamic motion of the industrial wind turbine structure with either the wind loading acting on the rotor blades or the responses of the turbine controller."

It isn't the actual weight that poses the most challenge to our shifting soil; it is the rotation of the blades that shift and sway as they move. As they move from one direction to another, they distribute the sway so a weakened area will soon become an earthquake hazard.

Based on this information, the DEIS should address the following specific issues. 1. What is the effect of the rotating blade motion and sway of the turbines on soils subject to seismic impacts?

2. What is the potential for earthquakes in the project area? 3. What would the impact be on my pond dam if seismic activity occurred at various intensities? 4. What would the impact be on my earthen pond dam be if one of these turbines - T-35 through T-38 collapsed as was recently reported in Fenner, NY? None of these questions are properly answered in the DEIS. (Submittal 336 – Humphrey, Peter)

Response: No data exist to indicate wind turbines produce vibrations which in any way cause or otherwise lead to earthquakes. To date, wind turbines have operated successfully in Sheldon, Wethersfield, and Eagle, with no reports of the wind turbines causing earthquakes. Wind farms now operate around the world in farm areas where farm ponds are common without reported incident.

Seismic design of the Project is addressed in FEIS Section 6.29.9. Risk to the earthen dam constructed by Mr. Humphrey is addressed in FEIS Section 6.29.7.

6.29.11 Earthquake Monitoring Stations (293)

Impact on seismoacoustic systems (seismological monitoring stations): no wind turbines should be built within 10 km of a seismoacoustic monitoring array. Any proposed turbines with 50 km should first be evaluated for impacts. (Submittal 293 – Accardi, David)

Response: Restrictions such as those noted in the comment may be appropriate for exceptionally sensitive seismoacoustic monitoring stations, such as those located in an exceptionally seismically quiet area and designed to detect distant nuclear tests. However, no such stations exist near the Project area.

According to a listing by the USGS, the closest seismological monitoring station to the Project Area is located at Canisius College, which is approximately 32 miles (50 km) from the nearest part of the Project Area. According to Mr. Mark Castner, Director of the station at Canisius College, there has been no impact on the operations due to the construction of the existing wind turbines in Wyoming County, which are as close as 37 km to the station, and he expects no effect even if the new more sensitive instruments are installed. Notably, the 2.5 MW turbines installed on the waterfront in Lackawanna are about 10 km from the Canisius seismological monitoring station.

6.30 Construction Monitoring

6.30.1 Environmental Monitor Logs (280)

The DEIS Section 3.16 Construction Monitoring and Restoration Activities

> *"to minimize such impacts during construction, Stony Creek will develop and implement an Environmental Monitoring Plan (EMP) ... to ensure that the mitigation measures, environmental protections and best management practices associated with construction of the Project are implemented in accordance with the permit conditions of the Project."*

The plan includes the use of an Environmental Monitor (EM) to perform a number of project monitoring tasks, which include: reviewing reports, training construction management and crews, keeping construction personnel and equipment in designated area, performing surveillance and daily recording of activities, ensures that temporary and permanent erosion and sediment controls are installed and maintained, guarantees that fuel handling and equipment maintenance operations are located a pre-determined distance from wetlands and water bodies, and responds to and investigates incidents that contain the potential for adverse environmental consequences. According to the EMP, the EM is required to track events on a daily log, complete monthly reports, and in the case of an incident, a noncompliance report, as well as a post construction report. The EM is also required to document restoration activities. Since the proposed project is not the first completed by the applicant/sponsor, it would be useful to review the aforementioned documents from earlier WTG projects completed by the applicant/sponsor to make sure they were completed. The documents may also provide information useful in anticipation of incidents, such as spills of oil or fuel or releases of stored wastes, etc. The logs, and reports would provide real world data for impact analysis of incidents and provide for mitigation.

Does the lead agency and project sponsor think that the performance of the Environmental Monitor (EM) on previous WTGs projects by the sponsor could be useful to determine if the following were completed: reviewing reports, training construction management and crews, keeping construction personnel and equipment in designated area, performing surveillance and daily recording of activities, ensuring that temporary and permanent erosion and sediment controls are installed and maintained, guaranteeing that fuel handling and equipment maintenance operations were located at pre-determined distance from wetlands and water bodies, and responding to and investigating incidents that contain the potential for adverse environmental consequences? Would it be useful to review the EM documents (daily logs, monthly reports, noncompliance reports, and post construction reports) from previous WTG projects completed by the applicant/sponsor to make sure they were completed? (Submittal 280 – Core Environmental)

Response: Stantec monitored compliance with the Special Use Permit during construction of the High Sheldon Wind Farm. Accordingly, as requested by the commenter, the Town's consultant for the Stony Creek Wind Farm has reviewed the Environmental Monitor's records for Sheldon, including daily and weekly construction SWPPP reports, spill reports, and daily and weekly restoration reports. It is also noted that everything required of the Environmental Monitor was completed in Sheldon.

The Lead Agency anticipates that the Town of Orangeville, as part of the Host Community Agreement, will require an independent third party Environmental Monitor, paid through an escrow account provided by Stony Creek, specifically to monitor construction and restoration activities for compliance with Special Use Permit requirements.

6.31 Decommissioning

6.31.1 Short Turbine Life (007, 023, 040, 056, 097, 099, 125, 134, 165, 170, 183, 215, 309, 315, 348)

Is this true? (Turbine useful life is short and then they are abandoned.) (Attachment: American Thinker article, 3 pp.) (Submittal 097 – Dylag, M.)

It's a just a matter of time that turbines will quit running, either from being run down or due to the turbine company's loss of tax breaks and subsidies. Though a turbine can supposedly run 7-15 years, the question is how long will the wind company actually own the wind farm? Not long - just long enough to reap the benefits that the tax incentives and our pristine rural countryside provide it with. Eventually it won't be feasible to operate them and they will become abandoned. (Submittals 007 – Humphrey, Peter; 023 – Raab, Sherri; 040 – Maxwell, Ann Marie; 056 – Karasiewicz, Nancy; 099 – Dylag, M.; 125 – Orlowski, Joseph; 134 – Dickinson, Darryl; 165 – Dickinson, Mary; 170 – Malicki, Alice; 183 – Librock, John; 215 – Makson, Paul; 309 – Davis, Barbara; 315 – Wilkinson, Nyla; 348 – Karasiewicz, Nancy (verbal))

Response: Wind turbines are engineered for a life of 20 years; however, Stony Creek expects that with regular maintenance the wind turbines will operate reliably beyond 20 years. Because the wind resource in the Project Area will not be depleted or substantially changed over the years, the Project Area will remain a viable location for generation of electricity from wind. Stony Creek anticipates energy markets will continue to favor the generation of electricity with resources that are renewable and have low marginal costs. If necessary, wind turbine nacelles could be replaced entirely to allow continued operation indefinitely. Decommissioning of turbines which have ceased to operate is discussed in DEIS Section 3.17 and this FEIS section.

6.31.2 Responsibility (339)

Who will be responsible for the turbines if there is a problem? Invenergy? Orangeville? (Submittal 339 – Fugle, Joseph and Cheryl)

Response: Stony Creek will be responsible for the wind turbines and will manage and perform the operations and maintenance tasks as outlined in the Operations and Maintenance Plan provided in DEIS Appendix I. Stony Creek anticipates that a staff of approximately six full time personnel will be required to manage, monitor, and maintain the wind turbines, roads, and other Project infrastructure. This staff will include maintenance technicians trained in WTG operation and maintenance. In addition to performing this routine WTG maintenance, Project personnel will perform unscheduled maintenance and quickly respond to signals from the WTG that may be stopped for other operational reasons.

6.31.3 Decommissioning (007, 023, 040, 056, 099, 107, 125, 134, 165, 170, 183, 215, 227, 309, 315, 348)

Though these turbines are going to have decommissioning agreements, who is going to make sure they are properly funded, adjusted for cost increases for future years, and to make sure they are enforced when it comes time to take them down? What is the anticipated amount of the bond? What is the precise mechanism for bonding (bank, investment service, etc.)?

The salvage value of these big units is going to be small compared to the cost of removal. The result will be that these already intrusive 400 foot towers are going to get uglier as they become idle eyesores for all to see. I seriously doubt whether the landowners or the town government will have the resources to enforce a decommissioning plan or contract. Site restoration should also specify removal of the concrete base and replacement with topsoil equivalent to that excavated.

Please provide specific details. How much does it really cost to decommission a turbine? The DEIS should include a model and data of an actual decommissioning project. We already have an abandoned tower on 20A just east of the Town Hall. It was built last century. It sits and does nothing. We don't want our town to become an industrial wind turbine ghetto. (Submittals 007 – Humphrey, Peter; 023 – Raab, Sherri; 040 – Maxwell, Ann Marie; 056 – Karasiewicz, Nancy; 099 – Dylag, M.; 125 – Orlowski, Joseph; 134 – Dickinson, Darryl; 165 – Dickinson, Mary; 170 – Malicki, Alice; 183 – Librock, John; 215 – Makson, Paul; 309 – Davis, Barbara; 315 – Wilkinson, Nyla; 348 – Karasiewicz, Nancy (verbal))

(Attachment: web article, 2 pp.) (Submittal 107 – Dylag, M.)

The Orangeville Town Board should get at least 2 detailed estimates from local scrap yards for the current scrap prices of steel, copper, and transport to be sure that Invenergy has given sufficient bonding to cover the decommissioning of the turbines. Scrap prices vary from year to year. At auction, heavy manufacturing equipment in some cases doesn't even get a bid because it costs more to dismantle and remove than it is worth. Due to the massive size of the turbines they will have to be cut to a size that can be transported. In most cases the decommissioning costs have been severely under estimated. We must be sure the developer assumes all the price risk, not the community. Please see attached "Wind Decommissioning Costs- Lessons Learned" by Tom Hewson, in particular the highlighted portions. (Attachment: web article, 2 pp.) (Submittal 227 – Nevinger, Mary)

Response: Wind turbines are engineered for a design life of 20 years; however, Stony Creek expects that with regular maintenance the wind turbines will operate reliably beyond 20 years. The ability to generate electricity with no fuel cost and the availability of Project infrastructure (e.g., foundations, ECS) installed at considerable cost by Stony Creek will justify ongoing investment in equipment maintenance, repairs, or replacements. Mechanical maintenance is not expected to be a reason to decommission or abandon the plant.

Decommissioning is Stony Creek's obligation, but to ensure funds are available for decommissioning, in the unlikely event Stony Creek does not fulfill its obligation, Stony Creek will continuously maintain a fund or bond payable to the Town for the removal of non-operating WTGs and appurtenant facilities. The amount of the security will be set to cover the expected costs of decommissioning less the salvage or resale value of the wind turbines and related equipment. The proposed decommissioning plan includes a provision for periodically updating these estimates in a report to the Town Board during the life of the Project. The basis for decommissioning cost estimates is discussed in FEIS Section 6.31.4.

6.31.4 Decommissioning Cost Basis (291)

Provide the report by LVI Environmental and/or the basis for materials/labor/sales prices/disposal costs. (Submittal 291 – Stantec)

Response: LVI provided its estimate in the format of a set of spreadsheet tables that broke out decommissioning tasks for different aspects of the decommissioning effort. These tables were provided as Attachment A to the Decommissioning Plan provided in DEIS Appendix I.5. The information in Attachment A was developed by LVI, based on its experience as a demolition contractor.

6.31.5 Ownership Transfer (007, 023, 040, 056, 099, 125, 134, 165, 170, 183, 215, 291, 309, 315, 348)

Note that the Town Zoning Ordinance requires that in the event of transfer of ownership of Stony Creek, the new owner is required to comply with all provisions of the Ordinance including decommissioning requirements. (Submittal 291 – Stantec)

Decommissioning should also address the problem of change of ownership of the wind turbine facility or bankruptcy. I understand that hundreds of turbines out west have already been abandoned and wind turbine facilities often change ownership. How can you assure us that this won't happen in Orangeville? (Submittals 007 – Humphrey, Peter; 023 – Raab, Sherri; 040 – Maxwell, Ann Marie; 056 – Karasiewicz, Nancy; 099 – Dylag, M.; 125 – Orlowski, Joseph; 134 – Dickinson, Darryl; 165 – Dickinson, Mary; 170 – Malicki, Alice; 183 – Librock, John; 215 – Makson, Paul; 309 – Davis, Barbara; 315 – Wilkinson, Nyla; 348 – Karasiewicz, Nancy (verbal))

Response: Stony Creek acknowledges that permit conditions, zoning requirements, and decommissioning requirements apply to Stony Creek Energy LLC and would be the responsibility of Stony Creek Energy LLC even in the event that ownership of Stony Creek Energy LLC is transferred to a different owner. The Decommissioning security belongs to the Town; thus, change of ownership of Stony Creek Energy LLC does not impact it.

6.31.6 Trust of Invenergy (102)

Orangeville will be left holding the bag. Be careful when dealing with Invenergy. They are not your friend. (Submittal 102 – Dylag, M.)

Response: Comment noted. Please refer to FEIS Sections 6.31.2 and 6.31.5 regarding on-going responsibility for turbine maintenance and decommissioning obligations.

6.31.7 Decommissioning Terms (132)

After reading the decommissioning plan in the DEIS I would like the following questions answered:

- *What happens when Invenergy doesn't renew the security instrument prior to expiration?*
- *Why would the security instrument have only a 1 year term? The estimates for costs in labor and equipment for removal is as of today. The same with the supposed income from selling the scrap. What happens in a few years when costs for removal have soared and income from scrap has dropped. Who is picking up the difference?*
- *Nowhere in the DEIS does Invenergy state that they will be the ones responsible for the removal of the industrial wind turbines. Who is responsible?*

- *Every industrial wind turbine company states the life expectancy of these turbines is only 20 years. What happens then? These companies are only erecting these industrial wind turbines because they are getting money from the government which means you and me are paying for them. To repair or remove these industrial wind turbines companies receive no money from the government. What would their incentive be to repair or remove them? From what I've seen in Hawaii, California, Oklahoma and Texas, all these companies do is walk way. They either go bankrupt or vanish. People from these states now are warning others thinking of erecting industrial wind turbines. Their warning is get a security instrument for each turbine and do not combine all the turbines under one security instrument. (Submittal 132 – Jensen, Paul)*

Response: Failure to maintain the decommissioning security would violate Stony Creek's permission from the Town of Orangeville to operate the wind project. The Town could act under the bond before it would expire. Because the wind resource in the Project Area will not be depleted or substantially changed over the years, the Project Area will remain a viable location for generation of electricity from wind. Stony Creek anticipates energy markets will continue to favor the generation of electricity with resources that are renewable and have low marginal costs. The ability to generate electricity with no fuel cost and the availability of Project infrastructure (e.g., foundations, ECS) installed at considerable cost by Stony Creek will justify ongoing investment including properly maintaining the decommissioning security instrument.

As noted on page 177 of the DEIS, if in the unlikely event the Stony Creek Wind Farm ceases operations, Stony Creek will remove facilities from landowner's properties within 12 months in accordance with Stony Creek's contracts with landowners.

To ensure funds are available to the Town of Orangeville to cover costs of decommissioning, Stony Creek has proposed a decommissioning plan that provides for a surety bond or equivalent financial security instrument. The amount of the bond will be sufficient to decommission all 59 WTG's.

The proposed decommissioning plan includes a provision for periodically updating the estimates in a report to the Town Board during the life of the Project.

The decommissioning plan specifies a one year term because it is assumed that this is a typical practice for issuance of bonds and other security instruments. The security would be renewed annually so that at no time would security not be in place for the required amount.

6.31.8 Restoration after Decommissioning (337)

The wind turbines have a typical lifespan of approximately 14 years and a company that can change its responsibilities when changing its legal name states it is bonded and guarantees to dismantle the 59 (at last count) turbines at the end of their functional period. How will the land be returned to a useable state after being cris-crossed with access roads and filled with huge concrete foundations? Perhaps the need will be greater for a housing development than for food generation in 15 years. The roads will be in place. (Submittal 337 – Ramsey, Gerald and Donna)

Response: Lifespan of the project is discussed in FEIS Section 6.31.1. As discussed in FEIS Section 6.31.2, decommissioning and other permit obligations will remain the responsibility of Stony Creek Energy LLC. A change of company name would not remove the obligations of the company.

The decommissioning plan provided as DEIS Appendix I.5 describes the methods to be used to restore land as part of decommissioning. As described in the plan, after the wind turbine and pad-mount transformer are removed, topsoil in the area of the wind turbine foundation pedestal and the pad-mount transformer foundation would be removed to a proper temporary storage pile, and the foundation pedestal and transformer foundation would be exposed. The anchor bolts, rebar, conduits, and concrete in the wind turbine foundation pedestal and transformer foundation would be removed to 4 feet below grade.

After removal of the foundation materials, the areas would be filled with clean compatible sub-grade material compacted to a density similar to the surrounding fields. Topsoil would then be replaced.

Cables in the area of the pad-mount transformers would be cut to a depth of 36" or more (up to 48”, in accordance withTown Code and the Agricultural Mitigation Plan), but the cables between the transformers would not be removed as part of project decommissioning. Environmental and agricultural impacts are minimized by leaving the cables in place. The cables contain no materials known to be harmful to the environment.

6.32 Cumulative Effects

6.32.1 Cumulative Effects to Wildlife (258, 278, 382)

This section completely lacks any mention of the cumulative impacts of wind projects to wildlife species. It is stated that: "Because of the heavy incidence of wind turbines in this portion of Wyoming County, some impacts may even be less than for stand-alone facilities." Data should be provided to support this statement. Though the DEIS makes several references to the Stony Creek project having no negative population effects on birds and bats, the reduction or extirpation of local populations of some species is possible as a result of several projects operating in a given area. Negative impacts to wildlife, particularly birds and bats, are generally not less in an area with several operating wind projects than in an area with only one project. Increases in habitat fragmentation, exposure to spinning turbine blades, human presence and disturbance to sensitive breeding, feeding or roosting areas, and possible introduction of invasive or parasitic species all result from the presence of multiple wind projects in one area.

A discussion describing the anticipated cumulative impacts from the High Sheldon, Enel Wethersfield, Noble Wethersfield, Noble Bliss, and Stony Creek projects needs to be provided, including the total number of turbines, approximate area of coverage, any and all likely impacts to birds and bats, and potential consequences of such impacts to local and regional populations of these species and their use of the project area. (Submittal 382– NYSDEC)

Upon studying the DEIS there is absolutely no discussion of environmental cumulative effects from multiple wind farms. As the attached map indicates Orangeville is surrounded to the west and south by operating wind farms and a planned wind farm to the east. Of primary concern from an environmental perspective is the use of the Tonawanda Valley by migratory waterfowl. The Tonawanda valley starts in Orangeville and travels north for about 30 miles. The Tonawanda heads west near Batavia which is just south of the Iroquois National Wildlife Refuge. As one of our field study papers indicate thousands of Canada Geese were observed in just one hour from the top of Cobble Hill as they flew north along the Tonawanda. Swans, ducks, snow geese have also been identified as they migrate through Orangeville. (Submittal 258 – Moultrup, Steven)

Section 6 – Cumulative Impacts – The cumulative impact section is slightly more than one page and does not provide a full analysis of the potential adverse affects of multiple wind energy projects. Particularly troubling is the lack of data provided such as avian and bat mortality data even though this information is readily available for other projects in western New York. We recommend this section of the report be revised to include all pertinent information relevant to this analysis. In addition, the scope of the analysis should be expended to greater than 7 miles from the project area. As mentioned, all constructed and proposed projects in western New York should be included in the analysis. (Submittal 278 – US Dept of the Interior)

Response: An analysis of cumulative impacts to birds and bats from wind farms operating and reasonably foreseeable in Wyoming County, New York is provided in FEIS Section 4.11.

Submittal 258 questions cumulative impacts to waterfowl. As discussed in FEIS Section 6.15.9, data from operating wind farms show that impacts to waterfowl are relatively low. At Stony Creek and other wind farms in the region, impacts to waterfowl are similarly expected to be low.

Cumulative impacts on other natural resources are addressed in FEIS Section 6.32.2.

6.32.2 Cumulative Visual/Other Impacts (340, 382)

The applicant needs to carefully consider the impact of not only proposed wind farms in the proximal area such as Dairy Hills Wind farm but also existing wind projects such as Invenergy High Sheldon Wind Farm, Noble Wethersfield Windpark, and the Enel Wethersfield Wind Farm. Cumulative impacts includes most facets of review such as visual impacts as well as bird and bat impacts. On page xxxv, the DEIS states, "For example, wind farms are a common sight in this area, thus the negative aspects of the visual impact are limited as the local skyline already includes numerous similar intrusions." This statement is not consistent with the need to view the additive effect of a new project among already existing projects. (Submittal 382 – NYSDEC)

Cumulative impacts have not been discussed here at length because the DEIS utterly fails to comply with the requirement under SEQRA that such impacts be analyzed. The DEIS devotes little more than a page to this topic, with no analysis, only conclusory assertions. Arbitrarily, the DEIS selects a seven mile radius to limit its analysis of the impact of adding a fourth industrial wind farm to the area, where three other wind farms operate in three adjacent towns. Already the High Sheldon Wind Farm is clearly visible from the western part of Orangeville, and many if not most residents cannot escape the visual impact of the three adjacent wind projects whenever they drive west, south or east of town.

There is no discussion of the cumulative impacts of another wind farm on the natural environment, or on the character of the rural portions of the community which, as in Sheldon, Wethersfield and Eagle, would be largely industrialized. The DEIS states that the project should be approved because the area is already ruined by wind farms, offering no more than a cynical conclusion, from the perspective of those who continue to live in Orangeville for its rural character and amenities:

Because of the heavy incidence of wind turbines in this portion of Wyoming County,... the negative aspects of the visual impact are limited as the local skyline already includes numerous similar intrusions. (Submittal 340 – Abraham, Gary)

Response: The purpose of a visual impact analysis is, according to the DEC, to evaluate the potential for adverse visual and aesthetic impacts on receptors outside of the facility or property. For wind farms, cumulative visual impacts are concerned with the combined visibility that can occur if a viewer is able to see two or more developments from one viewpoint. The DEIS has considered the cumulative effects arising from this combined effect of all wind farms which can be (or may be) seen from the subject viewpoints.

It is first noted that the application for the Dairy Hills project has been withdrawn, while the other wind farms noted exist and are visible from Orangeville. The cumulative impacts

evaluation in the DEIS considers impacts on a viewscape in which wind farms are an existing element. Cumulative effects are thus the total impacts on the resource, here the visual resources of the community.

The mere increase in the number of turbines visible does not create a significant negative impact, and the "additive effect" here does not present harm to the community. There are no critical or specially designated scenic vistas within the project viewshed, which largely consists of farmland and forests. The public's enjoyment of particular resources will not be diminished by the increase in visible turbines. The design of Stony Creek is compatible with the existing wind farms; its addition will not create a jarring change to the vistas currently presented. Wind farms are accepted elements in the landscape of the Town; the Town of Orangeville Comprehensive Plan specifically calls for introduction of renewable energy facilities including wind.

The Stony Creek Wind Farm, in combination with other such projects, does not present such a change in the viewshed character that it would be significantly diminished.

The DEIS does not say the area is already ruined. The commenter provides no support for his allegation that the cumulative visual impacts will be inconsistent with the Town's rural character and amenities. In fact, across Wyoming County, Upstate New York, and the rural regions of the country, wind farms have added significant benefits to the community without creating significant adverse cumulative impacts, while providing economic benefits to landowners that preserve the very fabric the commenter is concerned about.

In addition to the impacts addressed in the Cumulative Impacts section (Section 6) of the DEIS, cumulative impacts were assessed throughout the DEIS for each applicable environmental resource. More specifically, the DEIS contained discussion and analysis of cumulative impacts in the following sections of the DEIS:

- Table 1 (Section 1.1.7) "Stolle-Meyer Transmission Limits and Wind Generation";
- Section 2.3.4 "Wyoming County Guidance on Wind Energy";
- Section 3.5.3 "Nocturnal Migrating Birds";
- Table 17 (Section 3.5.3) "Results of Post-Construction Bird Monitoring Studies at Operating Wind Farms";
- Section 3.5.4 "Bats";
- Section 3.8.1 "Existing Visual Setting";
- Table 25 (Section 3.8.2) "Summary of Aesthetic Resources within 7-miles of Proposed WTG"; and
- Section 3.8.3 "Inventory of Aesthetic Resources".

6.33 Miscellaneous/Uncategorized Comments

6.33.1 Generally Supportive (72, 76, 77, 78, 80076, 080, 130, 196, 347, 349, 352, 353, 355, 362, 363, 365, 372)

Supervisor, Board Members, Thank you for allowing me to speak tonight. My name is Jill Beagle, and I am speaking on my behalf as well as my husbands. Every person is here tonight for the same goal, we may not agree to the method of obtaining this goal, however every person here is after a better life for the future- whether it is kids, Grandkids, or our own retirements. Gary has lived in Orangeville for 26 years, and I have been here for 12. We are both lifetime residents of Wyoming County. Your job as a town board is to do the best job for the future of our town. This is where the disagreement comes from-what Gary and I think is a great idea for us and our neighbors, others here see as the downfall for the town. I appreciate the great pressure that puts on this board. Thank you for your time. Gary and I would like you to approve the DEIS. (Submittal 072 – Beagle, Jill; 372 – Beagle, Jill (verbal))

We are here tonight to discuss the environmental impacts of putting wind turbines in our town. That seems a bit odd to me when turbines are known and used throughout the world as a pollution-free, renewable energy source. Opponents of the project have no factual information that counters any component of Invenergy's DEIS. Their claims are nothing more than an attempt to stop the project from moving forward. Let's base our decisions on facts and let the experts tell us if there is anything more needed to be included in the DEIS. (Submittal 076 – Lensenhuber)

I hope your vote on the DEIS portion of the windmill project will be in favor of the project. In my opinion the benefits of the project FAR outweigh the negative effects. We have come a long way with this project and our town needs them. To me, they really do make clear skies for the people of Orangeville. (Submittal 077 – Compton, Philip)

The true definition for a windmill is a building with sails or vanes that turn in the wind and generate power to grind grain into flour, also a similar structure that is used to generate electricity or draw water, which by the way has been used for many years now and has been known as one of the cleanest most natural ways to generate power. Wind is here to stay, and all we are trying to do is to harness this great clean natural energy with the use of windmills, hence the name. In the past wind has offered the ability to enjoy sailing, the flying of our planes for keeping our families together and also for ability to offer business abroad. You see the use of wind and the propeller has already helped in many ways. We have way more to gain and much less to lose, so please take the time to sit down with your families and discuss the pros and cons and remember the choices you make today will affect your children tomorrow. Also please take the time to look at this decision from other peoples perspectives as it may effect them much more than you. Thank you, I am sure you will make the right choice. (Submittal 078 – Panicali)

It's very humorous to listen to all that false propaganda coming from the clear skies over Orangeville and their well educated so called wind turbine experts. I disagree on the studies which were performed by various agencies, especially the upsetting of well water tables, oil spills, flickering, scaring of livestock and game. Many times we've seen herds of deer feeding right under the turbines in the town of Sheldon. It's all pony and hogwash. I am for the Stony Creek wind project. Voter, veteran of the United States Armed Forces and, property owner on Syler Road. (Submittal 080 – Dabek, Steve)

Invenergy's DEIS says the wind farm will produce enough clean energy to power 37,000 homes annually. This is no small amount. We all know that right now our country is at war and our troops are in harms way everyday to secure not only our freedom but also our energy future. We have the opportunity to reduce our dependence on foreign fuels produced in countries that despise America. Beyond the money that the community will gain from the wind farm, which can be used to reduce property taxes and improve our roads, we have the opportunity to make sure that 37,000 homes in New York receive power from a clean, American energy source. I think we have to take this opportunity for Orangeville, for our troops and for future generations of this community. (Submittal 130 – Chandler, Roger and Dorothy)

I would like to thank you for taking the time to thoroughly examine all of the factors involved in the proposed wind energy project. Your diligence and perseverance is greatly appreciated. It is sad that you have had to endure the controversy stirred up by clear skies over Orangeville. I respect their right to disagree with the majority of town residents and to express their ideas. A lot of good men and women have died to give them that right. Their innuendoes, half-truths, outright lies, and personal attacks have by far exceeded reasonable levels. It is equally sad that they have turned neighbor against neighbor, and in some cases, family members against each other. In concept, I totally support the wind energy project. If I could have my "druthers", I would like to see some or all of the electricity produced in Orangeville used in Orangeville, or at least available to be used here in an emergency situation. I have read most of the DEIS for the Stony Creek Wind Farm and found it very interesting. I will reserve comment on it until a later time. Please continue to carefully examine all of the information pertaining to the wind energy project. I have confidence that you will reach the right conclusion that is in the best interests of all of the residents of Orangeville. (Submittal 196 – Shumaker, William and Judith)

From what I understand, I'm at a disadvantage because I don't have a lot of facts that a lot of you people that are opposed to the wind mills have, but I believe that since this is all been going on, there was an election, the Board and I believe the people that won were voted by the majority who they are not here, of course, I see. All the people that are opposed to wind mills are here, but I think the majority are not. I think that the Town, the Board, should consider the majority. Now, we all know the saying, the squeaky wheel gets the grease and there's a lot of squeaking going around here. I just hope the Board considers the majority, the silent majority that didn't feel the need to come out here. I don't know. I just don't know. I mean the town is divided. For what? I just – I don't know. I wish the Board a lot of luck and I hope you people can all get along after this is over with. That's what I hope. (Submittal 347 – Almeter, Steve (verbal))

I'm a senior development manager with Invenergy as most of you probably know. I've been working on developing the Stony Creek Wind Farm for several years now. I just wanted to touch on a couple of points that were mentioned earlier this evening. And tonight we are hearing from all the people that are opposed to wind energy and who are telling you about the supposed negative effects of wind farms on local communities. You are hearing all these claims despite the fact that there are four operating wind farms in Wyoming County and that by and large the vast majority of the Town's people seem pretty pleased with the project, pretty pleased with the benefits that it's brought to the community and this is on top of tens of thousands of wind turbines operating safely, reliably around the country and around the world now for over a decade.

Yet tonight you do hear from all the people that are against this wind farm so I think it's important to point out as was mentioned earlier that, in fact, there's broad public support for a

wind farm in Orangeville. I hear there's support from residents all over Orangeville whether they're concerned about the rising taxes or American energy independence. However, you know, don't take my word for it when I say that there is support among Orangeville taxpayers. I know it's broad and it's large. Over the past few years there's been not one but two separate surveys that were conducted of Orangeville taxpayers asking people what their feelings were about wind energy.

In 2006 there was a survey that was conducted as part of the town's rewriting of their comprehensive plan. Two to one people said that they were in favor of wind energy. In 2008 the second survey was conducted by the Wyoming County Planning and Development Office. Again, two to one people did say that they were in favor of wind energy in Orangeville. And as a developer, that is exactly the type of support that we hope to see when you combine this type of broad public support with an existing transmission line, strong wind speeds that everyone in Orangeville knows they have. You can make this for a very reliable, producing wind farm that can help reduce taxes, cut down on pollution. And we at Invenergy believe that that is an end product and the goal that the entire community should be proud of. (Submittal 349 – Schoenberger, Jay (verbal))

This project is directly aligned with and supports New York stated goal and providing 30 percent of all electricity from renewable sources by 2015. Wind power is not the entire answer but rather a component of the answer. This country needs to utilize more of the energy emanating from the sun today versus relying on the finite supply of stored energy from the sun from compounds in the ground that came from the sun millions of years ago. (Submittal 352 – Ahl, Joe (verbal))

I want to thank each and every board member for seriously considering the proposed Stony Creek Wind Farm consisting of 59 wind turbines. I know this hasn't been an easy undertaking especially with all the exaggerated and inaccurate allegations lofted your way and at all of you personally. Orangeville, the land I love too. I was born out here in rural land, raised in rural Orangeville and like my father plan on dying here in Orangeville too. Thanks for the opportunity to speak. (Submittal 352 – Ahl, Joe (verbal))

We should be proud that Orangeville and the communities in Wyoming County are in the position to develop a natural resource that's plentiful in supply and can be harvested to produce clean renewable energy. We have a commodity that other areas of the country have been developing for decades. I worked and drove in more than twenty states in the northeast and Midwest in the last eighteen plus years. I have seen the horrible effects of large coal burning plants on the environment like the ones in Ohio, Michigan and Illinois. I've seen the nuclear plants in Pennsylvania. These same states have and still are developing wind farms to offset the environmental impacts that those coal and nuclear plants have had on our environment. I can tell you that renewable energy is here to stay and/or should take advantage of the environmental and economic benefits that come with these types of projects. These benefits far outweigh any minor impacts that have on a project in our community may cause and that has been proven around the county and the world and just down the road in Sheldon. So I ask the Town Board to do what's due diligence in reviewing the DEIS but don't let this opportunity slip away. (Submittal 353 – Lensenhuber, Melvin (verbal))

First of all, I would like to thank the Town Board for this opportunity. I think you are doing a great job. I've talked to residents in favor of the Stony Creek Wind Farm and asked them why they'd don't speak or show up for town meetings. They came back with that…excuse me, at the

Town meetings I told them that we are outnumbered. They told me that they'd been intimidated and sick and tired of the lies and the BS by Clear Skies over Orangeville. They said they voted for the Board members and believed they will review and fight for what's right and what the majority in the community want. The survey was almost a landslide in favor. I hope and believe the Town Board is reading between the lines. (Submittal 353 – Lensenhuber, Melvin (verbal))

And I think often lost in the discussion is the environmental benefits of wind energy, renewable energy in general. The European commission tried to quantify what the affects of the different fuels that are used. The cost of the fuel isn't the only cost. There's also the economic and environmental damage from every fuel. European commission did a study on that and determined that wind and hydro are the least expensive forms of energy as far as the social and environmental damages. Coal is nine times greater than renewable energy source, wind and hydro. Natural gas four times greater and nuclear two times greater. And the caveat with nuclear is that it was quite a bit more than two times greater the impact if you lived in Chernobyl, Russia. The downside of this is so much greater. (Submittal 355 – Mulcahey, Michael (verbal))

So then, why, why in Orangeville or why, you know, what's the impact to a place like Orangeville? And to me the best answer is somebody else has already mentioned, is check with places that have wind projects in place. In Louis County, as it's Upstate New York, Tug Hill Plateau has 195 wind turbines been there since 2005 and 2006. It was done in two phases. And Jefferson Community College and I encourage everybody to look up the surveys there, has done an annual survey including opinion surveys on the benefits or impacts of the wind energy project. The 2008 survey they found that the past impact of the wind farms on the county by more than ten to one ratio people felt it had a positive impact than the people felt it had a negative impact. Regarding the 2008 survey regarding the future expansion of wind energy in the County, 79.2 percent said they will support it. Almost 80 percent would support it. The 2009 survey that number went to 90 percent. In addition, people were asked what the impact was to themselves. 61 percent said there was no impact and 32 percent said that the wind project had a positive impact. That's 93 percent of the residents. (Submittal 355 – Mulcahey, Michael (verbal))

I am hearing the same thing that I've heard in Sheldon for the last four years. The arguments about noise, impacts on health, water quality and the sky falling have simply proven to be not true. So I commend Supervisor May and the Orangeville Town Board for continuing objectively looking at the project and hope that the Stony Creek Wind Farm gets built because the benefits are for real and are good for the entire community, not to just those with turbines on their properties. (Submittal 362 – Henneberger, Dan (verbal))

I've been a wind developer with Invenergy since 2001. Our company and in particular the development group that's located in Rockville, Maryland, that includes myself, Jay, David Groberg, David Groberg who's here tonight and others work hard to develop projects that are designed responsibly and they provide competitively priced energy to the end user. This project has been designed to meet both of those goals. We have prepared a detailed DEIS to provide to the town Board the information it needs to make a careful decision. We have worked to ensure the information in the DEIS is based on facts and that the studies were conducted by qualified experts. We respect that there are different opinions on these projects and sometimes different interpretations of facts and information and we are glad that we have these kinds of forums where we can hear those different opinions. We look forward to working with the town Board and its engineer at Stantec supplying the additional information that they might need to produce

an FEIS that addresses these concerns. Ultimately, it is our goal that this process will result in a project that addresses these concerns as much as they can be and that the entire town can be proud of. (Submittal 363 – Miller, Eric (verbal))

As many of you know, I've worked with Invenergy since the development work began roughly seven years ago. I'm now a full time employee at High Sheldon Wind Farm. As part of my job, I talk with residents all over the town and having lived in Sheldon all my life, I know just about every farm family. Also, my house is about 1,300 feet from the nearest turbine. I've had no problems with sound or shadows or any of the other issues raised here this evening. In general, I've got to say that the chicken little scenario just hasn't happened. Nothing's happened in Sheldon related to some of the claims that have been made. And we have more residents than you do in Orangeville. (Submittal 365 – Kehl, Mary (verbal))

Response: Comments noted.

6.33.2 Generally Opposed (69, 75, 101, 191, 337, 339, 340, 350, 370, 374, 380)

This plan is simply unacceptable. How can some do this to neighbors? (Submittal 069 – Hopkins, Mary Jo)

This is the real deal with green energy. Don't think for one moment that Invenergy is your friend, because they buy their way into town. (Attachment: National Review article, 4 pp.) (Submittal 101 – Dylag, M.)

The list of problems with industrial wind turbines goes on and on. But as many politicians put it, it's all about the money. It's not about my family living in peace and quiet. That doesn't concern the fat cats in Albany or D.C. It's not about my family's health regarding these intrusive monsters. What it is about is that the majority of politicians will not take the time to educate themselves on the matter at hand. It's about the money. So... let's talk about the money - and then wonder why our country is in the financial mess that it is. Keep these figures in mind as I go through this: 1 billion, 698 million dollars - or possibly 2 billion, 547 million dollars. That's right - Billions and Millions! We are not talking chump change, at least not in my average mind. Hydro was here long before I was born, and will be here long after I'm dead and gone. At this time in February there was 1,274 megawatts of installed wind capacity. Now, break that number down, and it averages out to about 849 turbines give or take. Six years ago a 1.5 megawatt turbine was roughly 2 million dollars, from the golden shovel going into the ground to blades spinning and dumping electric into the grid. Today's figures are well over 3 million dollars. That means 1 billion, 698 million dollars were spent in New York on industrial wind! By todays figures, the next 1274 megawatts of industrial wind power will cost 2 billion, 547million dollars. If you think I'm off on my figures, you're probably right. More than likely, they are low. Keep in mind that the Lackawanna steel wind turbines were 5 million dollars apiece. At the rate the wind sales people and uninformed politicians would like to go, let's flip to the not so distant future. let's say 10,000 wind turbines are installed. Would that get us 9,000 megawatts of unsustained power into the grid? Maybe. One thing is for sure, it will cost 30 billion dollars for industrial wind in New York State, and this doesn't even include transmission and grid updates which will be greatly needed if we stay on this course. This is nothing more than corporate welfare. This is the raping of our land. To think 30 years ago, my Grandfather was livid over the government spending 200 dollars on hammers and 400 dollars on toilet seats. Industrial wind turbines is by far the biggest White

Elephant to hit the state of New York and our Nation as a whole. How can this amount of money be spent with so little results doing the rate payer and tax payer any good at all? (Submittal 191 – Sahrle, Gerald; 350 – Sahrle, Gerald (verbal))

Wind had always seemed a logical "green" energy source to harness, and because of the frequent substantial winds on the Orangeville hilltops we searched online a few years ago to consider the viability of placing a residential windmill on our property - to connect to our electric meter and save us funds on our electric bill. We reasoned it would be an exciting project and worth looking into. Unfortunately, reliable internet websites showed the wind character of our inland Western New York area to be poor to fair to generate residential power and we abandoned the idea. When commercial wind turbines were first proposed in Wyoming County, we were again hopeful that the venture could work, trusting that those with experience in the science and business could make it succeed and trusting that our leaders would be resourceful, open, fair, and study the propositions and overall plusses and minuses with due diligence. Unfortunately, physics doesn't change much, the wind business still has its challenges, and expecting is not the same as getting. Wind characteristics of inland Western New York have not changed; they continue to be frequently strong but erratic and unreliable, unsuitable to generate a constant or cost effective supply of wind energy, including energy generated by the already obsolete commercial wind turbines proposed for the Orangeville Stony Creek project. With growing research on effectiveness and economy to support an anti-wind turbine stance, we realize that the power and income ends of the proposed wind energy systems definitely do not justify erection of dozens of current generation wind turbines in Orangeville, NY. People in positions of political power, local, state and nationwide, should but are not critically reviewing the growing body of research and information available to them before making critical decisions to advance projects that seriously impact the people who placed them in office. Just because something appears to be "green" and is sold as being environmentally. Beneficial does not mean it will provide the apparent benefit. The Madison Avenue approach is alive and well, and anything being pedaled should be met with healthy skepticism and a questioning mind. At least look at the evidence available. Reasonable courses of action do not include remaining ignorant, ignoring information supplied by those deemed to be of an opposing opinion, accepting financial gain at the expense of neighbors, distorting the facts, misleading the masses or burying a minefield of impossible and costly conditions in proposed contracts of hundreds of pages of quasi-legal jargon. Huge tax subsidies from a state in deep financial crisis are wastefully being extended to opportunists to promote poorly conceived but "feel good" programs such as Stony Creek Wind Farm. This is so wrong, well meaning on some levels, but not right for the real world. Turbines will not function as touted, taxpayers that cannot afford it are paying for it through a state that cannot afford it. The project will spend largely and irrationally for things that won't work and will physically damage our town. The project will accept that the turbines will outlast any lease payments and town tax benefits. (Submittal 337 – Ramsey, Gerald and Donna)

Is Invenergy exploiting "green" energy as a way to get rich? Praying on the emotions of good hearted people, believing they will change the world, when in all reality a select few people are benefiting from the pain and sorrow of others. (Submittal 339 – Fugle, Joseph and Cheryl)

We have endured living near turbines. We chose to leave. We ask you, as the leaders of your town, to think long and hard before subjecting all the residents of not just Orangeville, but surrounding towns to this injustice. As the Mastercard commercial goes: Home with hardwood floor, swimming pool, landscaping, over 100 trees planted, perennial gardens, porch swing,

updated kitchen, fireplace – made with memories, blood, sweat, tears - $105,000. Cost of getting out of Sheldon after Helsdon – priceless. (Submittal 339 – Fugle, Joseph and Cheryl)

Is pitting neighbor against neighbor and family member against family member really truly worth the benefit? (Submittal 339 – Fugle, Joseph and Cheryl)

What is left, by way of direct benefits to the community, is the direct payments the project would provide to the affected taxing jurisdictions, including the town. If this is the only real benefit of the project, in light of the project's inability to meaningfully contribute to renewable energy needs and the likely marginal but negative effects on electricity costs, the Board should find the balance of burdens and benefits tips against project approval. (Submittal 340 – Abraham, Gary)

I lived here my whole life. I know this is tearing the town apart. One thing I'd like to say up front is I'm not against alternative energy. My senior year in college I did my senior project on alternative energy. There are some things that come along with this. As far as this DEIS process and this public hearing, one thing I'd like to make everyone aware of, there's a lot of people here are telling stores and making somewhat statement and what they think. I encourage you to put these stores and concerns into questions. Written questions and submit them if you want them to be addressed in the DEIS. Mr. Nevinger, you talked about your children and grandchildren hunting. If you have a concern, put it in a question. That's my recommendation to you. (Submittal 370 – Daniel, Eric (verbal))

I just want to conclude that I do respect the Board that won the election. OK, I didn't get my president elect, I oppose health care and we oppose wind turbines. Health care is going to the Supreme Court and I guess this will too. (Submittal 380 – Hopkins, Harold (verbal))

Due Diligence requires a "Hard Look" at potentially Dangerous Outcomes from Careless Siting of Industrial Scale Turbines ...First Do No Harm...According to Invenergy's own wording in the DEIS the following may occur; Potential impacts to water quality and quantity, including, existing wells/springs, surface water streams and wetlands, human health-through Noise and Shadow Flicker as well as negative impacts to the natural environment have been presented to you, the Orangeville Town Board through documented reports and testimonies of experts in their fields for the last several years and all these negative impacts have been systematically and repeatedly ignored ... The failure of the Orangeville Town Board to act responsibly…is equivalent to abandoning it's duty to protect Orangeville's citizens…, leaving them with little option but to seek remedy and redress thru the courts. (Submittal 075 – Orr, Cathi; 374 – Orr, Cathi (verbal))

Response: Comments noted.

6.33.3 Selection of Town Engineer (132)

Why did the Town Council pick Stantec to do the studies? Wouldn't it have made more sense to pick a firm that had no connection to the other wind farms? If flawed data were gathered in the previous studies, it would just be continued in Orangeville's study. A totally different firm could very well have a different outcome. (Submittal 132 – Jensen, Paul)

Response: Stantec is a local New York engineering firm knowledgeable about the SEQRA process and with experience evaluating wind farm concerns in all phases of the project: pre-construction, construction impacts, and post-construction/operational concerns. This level of experience is unique in western New York and makes the firm ideally suited to represent the

interests of the Town of Orangeville. Town Board selected Stantec as a SEQR consultant with duties including substantive review of the DEIS scope, DEIS, and FEIS. The avian/bat studies to which the commenter refers were performed during 2007-2009 by Woodlot, Inc., a firm located in Topsham, Maine that was acquired by Stantec in late 2007. The local Stantec office performing the SEQR review was not involved in those studies. Nevertheless, to insure an impartial review of that work, those studies and all associated comments have been reviewed by ABR, Inc., an independent firm with extensive experience in evaluating the impacts of wind turbine installations on birds and bats.

6.33.4 Quality of Life (334)

Item #9) The DEIS should fully examine Quality of Life issues in the vicinity of nearby wind farms. It should tabulate and present the experiences from other jurisdictions and other wind farms regarding a wide range of indicators to determine the extent to which the local residents believe that their local Quality of Life has improved - or not. The results should be fairly tabulated and presented to inform the Board and the people of Orangeville. (Submittal 334 – Bassett, David)

Response: For the past four years, public opinion surveys have been conducted in the Lewis County, NY community where the Maple Ridge Wind Farm operates. The Maple Ridge Wind Farm consists of 195 wind turbines installed in stages in 2005 and 2006.

The public opinion surveys have been conducted by the Center for Community Studies at Jefferson Community College (the "Center"). The Center conducts research that intended to benefit the local population and engages in activities that reflect its commitment to enhancing the quality of life of the area. According to the Center's website:

> The Center for Community Studies at Jefferson Community College supports and facilitates a wide range of community-building and educational activities that engage the community. In collaboration with community partners, The Center conducts unbiased community-based research and provides a forum for the productive discussion of ideas and issues of significance to the community. The Center's activities and goals reflect its values and commitment to enhancing the quality of life of the North Country.

The Center conducts annual public opinion surveys on a range of topics to inventory attitudes and opinions of citizens in Lewis County. Surveys have been conducted in Lewis County in 2007, 2008, and 2009. In each of these years, the survey included questions on people's opinion on further wind energy development in their community. Table 59 summarizes the results from the Lewis County surveys

Table 59. Lewis County Public Opinions on Further Wind Energy Development

	2007	2008	2009
Support	76.5%	79.2%	89.6%
No opinion	7.2%	6.2%	5.3%
Oppose	16.4%	14.4%	5.1%

As shown by the results in Table 59, public opinion of wind energy in Lewis County, home to the largest wind project in the eastern U.S., is overwhelmingly positive. Further, support for wind energy has remained strong over and increased every year that the project has been in operation.

As part of the Lewis County study, researchers checked for trends in different subgroups of the population. That found the support for wind energy was constant across both genders, all age groups, and all income groups, with the only significant relationship found being that those residents with highest formal education levels were most supportive of future wind energy development.

6.33.5 Few Complaints at Sheldon (351)

For well over a year, I've listened to all the claims being made by the opposition about wind energy. Clear skies over Orangeville wants everyone to believe that wind energy is terrible and will cause everyone in town to suffer in one way or another. So I decided to do a little research. After all, we have three wind farms right next door. The Town of Eagle has one 1,194 residents and 93 turbines. The Town of Wethersfield has 891 residents and 68 turbines. The Town of Sheldon has 2,561 residents and 75 turbines. Surely, if the claims made by the opposition were true about sound, water contamination, ice being thrown off the blades, etc, hundreds of people in Weathersfield, Eagle and Sheldon would have complained, right? It turns out that the number of people who still have ongoing complaints about the wind farms in these towns can be counted on two hands. If you do the math, that's about one in 500 people. Even more, it sounds to me like most of these people are complaining were opposed to wind farms from the very beginning. (Submittal 351 – Mengs, Marge (verbal))

Response: Comment noted.

6.33.6 EAF and DEIS Errors (058, 282, 357)

I have addressed and asked the town board when the engineering firm Wendel Dueschell was going to fix errors in the EAF forms; which focused on the environmental assessment forms for the proposed zoning laws, these errors were not fixed. I asked Wendy Marsh when STANTEC was going to address and fix errors in the EAF for the applicants application and also the errors in the DEIS; no answer was provided. I have submitted comments and questions for the SCOPE-these were not answered or mentioned in the reproduced Invenergy SCOPE - which only added corrections that Invenergy made notion to. I am now commenting on errors to the DEIS. (Submittals 058 – Geoghegan, Heather; 282 – Geoghegan, Heather; 357 – Geoghegan, Heather (verbal))

Response: This FEIS provides responses to comments received on the DEIS, including any corrections to the DEIS. Comments on the EAF forms and the scoping document are not part of this FEIS.

6.33.7 Citizen Power Alliance Conference (106)

This article was in the Batavia Daily on March 6, 2010. Did anyone from Orangeville town Board attend? Did anyone from Invenergy attend? (Attachment: Newspaper article, 1 pp.) (Submittal 106 – Dylag, M.)

Response: No members of the Orangeville Town Board nor Invenergy attended the referenced meeting.