EIGHT POINT WIND ENERGY CENTER

Preliminary Blasting Plan

Towns of Greenwood and West Union
Steuben County, New York

November 2017

Contents

1.0 Project Description

The Eight Point Wind Energy Center (the Project) is a utility scale wind generating facility and will have a maximum generating capability of approximately 101.8 megawatts (MW) from 31 wind turbines supported by associated access roads, collection line, collection substation, and an operation and maintenance facility. The Project is located on land either leased or purchased from owners of private property located in the Towns of Greenwood and West Union in Steuben County, New York. The Applicant intends to construct, own, operate, and maintain all components of the Project.

2.0 Project Requirements

A preliminary geotechnical investigation was performed by Kenney Geotechnical Services and completed on September 1, 2017 with a further update occurring on October 26, 2017. A total of 22 borings were completed at wind turbine locations during a preliminary site survey. From this report, there is a noted possibility that the sub-soil may consist of weathered rock or solid bedrock in a limited capacity within the Project Site.

Construction operations for the Project will involve the excavation of soil for the installation of foundations for the wind turbine steel structures and also for the placement of buried 34.5 kV collection circuit interconnect. If bedrock is encountered during excavation, the construction crews will extract and excavate it using backhoe or other appropriate equipment. However, if the bedrock cannot be extracted with backhoe, other means may be used for excavation (e.g. pneumatic jacking and/or hydraulic fracturing). If the rock cannot be excavated using the aforementioned heavy equipment, it may be necessary to use a blasting method, and in that case this blasting plan shall be utilized.

3.0 General

Eight Point Wind Energy Center, LLC (The Applicant) and its appointed blasting contractor considers safety as the top priority during all phases of blasting operations. The Applicant will follow all New York State regulations concerning the use of explosives. Specifically, the applicant will adhere to 12 NYCRR Part 39 and the New York State Industrial Code Rule 53. The Applicant will document and make readily available, all listed licensing of operators, all explosive storage certification, and all documented protocols for conducting safe and effective operations. All pertinent safety regulations and standards shall be applied as required by all local, state and federal regulations related to the transportation and use of explosives. Details of procedures for pre-blast surveys, explosives use, blast security, monitoring and documentation are enclosed.

Additional applicable safety regulations the Applicant will utilize as guidelines include:

- New York State Industrial Code Title 12- Part 39.
- Article 16 of the Labor Law of the State of New York.
- Code of Federal Regulations A.T.F. Title 27.
- Directive 495 standards of the National Fire Protection Association (NFPA).

- Occupation Safety and Health Administration (OSHA) standards, 29 CFR 1926.900 - 1926.914 and 1910.109.

Turbine foundations may exhibit two different type of foundation design. Depending on the site soil characteristics and specific depths to bedrock, foundations may be designed with concrete spread foot foundations or in the form of Patrick & Henderson (P&H) Tensionless Pier (PHTP) design. Direct burial or open trench methods will also be utilized during the installation of buried 34.5 kV collection circuit interconnect. As with turbine foundation excavation, if bedrock is encountered during excavation of the open trench/direct burial to place the cable bundles, the construction crews will extract and excavate it using backhoe or other appropriate heavy equipment. However, if the bedrock cannot be extracted with backhoe or other heavy equipment, blasting may be utilized. Blasting plans at each predetermined blasting site will be specified to the types of excavation and specific foundation design requirements.

The Blasting Plan is intended to serve as an overall guidance and protocol for all the blasting required for the Project. However, the appointed blasting contractor shall be responsible for generating an overall Contractor Blasting Plan and also any site-specific blasting plan if there are intangible hindrances encountered. This specification shall also be used for pre-blast surveys, notifications, use of explosives, security, monitoring, and documentation.

4.0 Pre-Blast Notifications and Surveys; Post-Blast Surveys

If blasting operations are deemed necessary, efforts shall be made to avoid or minimize the following potential adverse impacts: ground vibration, air blast overpressure, generation of fly rock, generation of dust, generation of noxious gasses and chemical residue in the subsurface. Methods to prevent these adverse impacts include specific site design of actual loads/charges configuration, the use of blasting delays, and the use of blasting mats etc.

A Pre-blast condition survey shall be performed on all structures within prescribed distances from blast zone. If Federal, State, local or OSHA regulations dictate minimum distances for accessing or protecting blast impacts, these thresholds shall be followed.

One month prior to commencement of blasting, the Applicant or its blasting contractor will hold public information meetings in all towns within a one-half (0.5) mile radius of the blasting site. One week prior to each meeting, all property owners within the one-half mile radius will be sent a notice letter concerning the hearing by certified mail, return receipt requested. “Door hangers” will also be left at all residences within one-half mile, providing the same information as the notice letters. The notice letters will offer property owners pre-blast surveys of structures and water sources or wells. The letters will explain that pre- and post-blast structure surveys and well monitoring are available, and will provide contact information for a person to answer property owners’ questions.

The Applicant or its contractor will arrange for a qualified supplier to conduct pre-blast surveys for all interested landowners. The results will be documented and stored by the Applicant for utilization during post-blast survey.

For any property owners within the one-half mile radius who express concerns about the impacts of the blasting on structures or wells, the Applicant or its contractor will perform post-blast surveys to assess any damage, and will remediate any damage found. The Applicant or its contractor will make all reasonable efforts to complete each post-blast survey within 30 days after the property owner comes forward with concerns.

5.0 Sequence of Blasting

Coordination of all blasting operations will occur between the appointed contractor, Project engineers, and local fire department. Blasting sequencing will have a core emphasis on the safe and efficient removal of any bedrock encountered during the construction phase of this Project without causing adverse impact to surrounding structures. Blasts will be developed so as to create adequate relief which will minimize ground vibrations and offer the greatest protection possible to the surrounding structures.

6.0 Blasting Procedures

All blasting operations will be strictly coordinated with the Applicant's on-site representatives and with the local Fire Department, emphasizing the safe and efficient removal of rock without impact to surrounding structures. Blasts will be developed to minimize ground vibrations and to maximize protection for surrounding structures. Blasts will comply with the following requirements:

1. Blasting will occur only during the hours of 9:00 am to 5:00 pm on Monday through Friday. No blasting will occur on state or federal holidays.
2. Blasting will occur only as set forth in the blasting schedule, except in emergency situations, such as electrical storms or where public safety requires an unscheduled detonation.
3. Warning signals will be sounded before and after each blast to warn of the impending blast and to indicate all clear. The warning and all-clear signals shall be audible within a quarter-mile radius, and will be distinguishable from one another. All individuals within the project site will be instructed on what the signals mean. The project site will be posted with signs explaining the signals, and similar signs shall be made available to property owners within a half-mile radius of the blasting site. All people including contractor's and sub-contractor's workers within the safety zone around the blast site shall be evacuated prior to each detonation.
4. Access to blasting area shall be restricted. The Applicant or its contractor shall actively control access to the blasting before and after each blast, until it has been determined that no unusual circumstances exist and that access to and travel in or through the area can safely resume.
5. Areas in which charged holes are awaiting firing shall be guarded, barricaded, and posted or flagged against unauthorized entry.
6. All blasts shall be made in the direction of the stress relieved face of the rock being blasted that has been previously marked out or previously blasted.
7. All stemming shall use clean, dry 3/8" crushed stone.

8. All rock-drilling operations shall be equipped with emission controls to control fugitive particulate matter. Blasting mats will be also used where needed to limit the occurrence of fly rock.
9. The Blasting Contractor shall insure that extra safety and judgment is exercised by the blaster to prevent the simultaneous blasting of numerous holes.

7.0 Blast Safety and Warning Signals

Signs shall be posted at the Project Site entrance to warn that blasting is occurring, and to explain the warning signal sequence. The Applicant or its blasting contractor shall communicate with local officials as required to ensure the safest possible operation.

Before each blast, the Applicant or its contractor shall conduct a security check within a radius of at least 1,000 feet around the blast site, and will warn all personnel in the vicinity of the blast site. No blasting shall occur until the area has been secured and determined to be safe.

Warning signals shall be sounded in the following sequence:

3 Whistles: **5 minutes to blast**

2 Whistles: **1 minute to blast**

1 Whistle: **All clear**

The Applicant or its contractor shall examine the blast site before sounding the all-clear signal to determine that it is safe to resume work.

8.0 Explosives Summary, Delivery, and Storage

For the purposes of this Project, all explosive and blasting materials and detonation devices shall be delivered to the Project Site on a daily basis. Currently, there is no proposed overnight storage on site. Only the amount of explosives required for the day's work shall be brought to the site to minimize adverse risk of incident. However, should the storage of blasting materials become required onsite, all explosives shall be stored in approved magazines when not in use.

If storage of blasting materials begins to be required over the period of the construction phase of the Project, all storage of explosives will follow the outlined requirements of the United States Bureau of Alcohol, Tobacco, and Firearms and New York State Department of Labor. Pre-determined storage areas of all explosive materials will remain at a location approved by the supervising blasting engineer of the blasting subcontractor and verified and accepted by the Applicant. Blasting caps and/or other detonating devices will not be stored with any Class A explosives for safety concerns and as outlined in the general requirements. There will be multiple copies (two or more) of an accurate and contemporary inventory of all explosives and blasting agents stored and these documents will be maintained and updated during the onset of blasting operations.

The designated storage site, explosive transporting vehicles, and areas where explosives are being used shall be clearly marked and will display the required warning signs. A daily tally of all explosives delivered, used and stored will be maintained at the main Project construction office on-site. Technical Data and Material Safety Data Sheets for all explosive products shall be provided to the Applicant before any blasting occurs.

During the handling of blasting materials, there shall be no smoking, open lights, or fire of any kind within 50 feet of any area where explosives are being handled. Ignition sources, except those needed in blasting operation (light fuses or fire electric detonators) will be permitted in an area containing loaded blasting holes. Containers of explosive materials shall be opened only with non-sparking tools or instruments. Metal slitters may be used for opening fiberboard boxes, paper bags or plastic tubes. After loading of a blast is completed, all excess explosive materials and detonators shall be removed to a safe location or returned at once to the storage area, observing the same rules as when being conveyed to the blasting area.

9.0 Blasting Mats

The utilization of blasting mats and backfill techniques will facilitate the control of any excessive amounts of rock movement when blasting in close proximity to identified structures. The specific placement and number of mats at each blasting site will be determined by the specific contractor. Mats will be placed so as to protect all people and structures on, or surrounding the blast site and property. Rubber tire type blasting mats that will be utilized on this Project will be approximately 12' x 12' in size. At 38 pounds per square foot, each mat shall weigh approximately 5,472 pounds.

10.0 Blaster Qualifications and Personnel

All blasters on this project shall be licensed and certified in the State of New York and have appropriate training in the safe use and handling of explosives. They shall also comply with all state and federal statutes and regulations regarding construction site safety, including the transportation, use, and handling of explosives. Weekly safety meetings shall be held on-site and documented by the Applicant or its blasting contractor.

All blasting operations shall be conducted by experienced, trained, and competent individuals who understand the hazards involved. Individuals working with explosive materials shall:

1. Demonstrate knowledge of and willingness to comply with safety and security requirements.
2. Be capable of using mature judgment in all situations.
3. Be in good physical condition, and not addicted to intoxicants, narcotics, or other drugs.
4. Have current knowledge of the relevant local, state and federal statutes and regulations.
5. Have obtained a Certificate of Competency or a license as required by State law.

11.0 Licenses and Permits; Compliance with Regulations

The Applicant's blasting contractor shall be fully licensed and insured for the transportation, use, and handling of explosives. Proof of insurance will be provided to the Applicant. The Applicant or its contractor shall obtain any blasting permits required.

Blasting shall be conducted in accordance with all applicable laws and regulations, including but not limited to 29 C.F.R. Parts 1910.109 (Explosives and Blasting Agents) and 1910.119 (Process Safety Management). In addition, U.S. Department of Interior Rules 816.61–68 and 817.61–68, and the Office of Surface Mining, Reclamation and Enforcement's Blasting Guidance Manual shall be followed where applicable.

12.0 Drilling, Loading, and Firing Procedure

All drill holes made in the blasting design will be made at diameters to freely allow for the insertion of the explosives without any hindrances. The drilling and loading operations will be a two-phased operation with drilling and loading being carried out independently in the same blasting area. Drilling shall be separated from loaded holes by at least the depth of the loaded hole but in no case less than 50 feet. The loading or loaded area shall be kept free of any equipment, operations, or persons not essential to loading. There will be no vehicle or foot traffic permitted over loaded holes. All blast sites will be guarded or barricaded and posted with danger signs to restrict unauthorized entry. In order to mitigate adverse events, no drill holes shall be loaded except drill holes selected to be fired in the next round of blasting processes. Cartridges shall be primed only in the number required for a single round of blasting.

After properly loading all required drill holes, all remaining explosive materials and detonators shall be immediately returned to an authorized magazine. There will be no explosive materials or loaded holes left unattended at the blast site at any time.

All personnel and other bystanders in the danger area shall be effectively warned of the impending blast and ordered to a safe distance from the area before any blasting takes place. Blasts will never be undergone until it is verified that all persons have retreated to a safe distance out of the predetermined danger area. Prior to the firing of a shot, a competent flag person shall be posted at all access points to danger areas.

13.0 Blast Vibration

All blasting operations which occur adjacent to residences, buildings, structures, utilities or other facilities will be undergone with specific planning and insight from industry professionals, contractors, inspectors, and the Applicant with full consideration for all forces and conditions involved and with the safety as the top priority.

Only the predetermined minimum amount of blasting material shall be used to effectively fracture bedrock for the excavation depth. Independent monitoring of vibration and air concussion levels shall be carried out by the contractor during all blasting operations. Monitoring will occur typically at the structures closest to

the blast site. Blasts shall be designed to follow industry vibration limits and state and local regulations, and to protect any nearby structures.

Ground vibration peak particle velocity limits shall not exceed the U.S. Bureau of Mines' Alternative Blasting Criteria (US Bureau of Mines 1980). Also, air blast overpressure levels will not exceed 133 peak dB (linear) two Hertz high-pass system.

14.0 Blast Monitoring

All blasts shall be monitored by an individual that is properly trained in the setup and use of seismic monitoring equipment. At least one seismograph will be in use at all times, at the structure nearest to the blast site. The results of blast monitoring are typically available before the next blast, so that design adjustments can be made for the next blast if necessary. The Applicant reserves the right to have an inspector present during all blasting operations. The entire cost will be responsibility of the contractor.

15.0 Blast Reports

A Blast Report shall be produced for each blast, these reports will be saved and stored in an appropriate folder depicting blasting operations, protocols, and past blasts. This folder will be stored in the Project construction office and made available as needed.

16.0 Typical Blast Design

Before conducting any blasting, the Applicant's blasting contractor shall submit a blast design for the specific blast area in conjunction with the excavation design (ex. spread foot vs. PHTP design). The design will include, at a minimum, hole sizes, depths, spacing, loading information and type of explosive being used per foundation design or trench method required. If necessary, the design shall be adjusted after the first blasts to meet control and seismic requirements and mitigate any unforeseen circumstances while maintaining the safety of crews, the local populace, and identified structures as the top priority.