

Fire Prevention and Emergency Preparedness Plan for Black Oak Wind Farm

1.0 Project Description

The Black Oak Wind Farm Project is a commercial scale wind farm project proposed by Black Oak Wind Farm, LLC. The project includes the construction and operation of 7 wind turbines, the installation and operation of associated collection lines, and related facilities including a substation in Enfield, NY.

2.0 Emergency Management Responsibilities

- Lead Coordinating Agency - Tompkins County Department of Emergency Response (DER)

The DER is the lead coordinating agency for regional preparedness and emergency management efforts. Its 911 dispatch center provides computer-aided dispatch services related to law enforcement, fire, and emergency medical services.

- Project Operator Emergency Response - Black Oak Wind Farm (BOWF) Emergency Response Team

The Project Operator will have specifically trained personnel available to handle emergency response situations. It is anticipated that the team available during construction will differ in make-up than the team available during day-to-day operation of the wind farm, in order to respond to the unique scenarios that may arise during these different phases of the project

- Law Enforcement - Tompkins County Sheriff's Department and the New York State Police
- Fire Protection Service - Enfield Fire Company (volunteer)
- Emergency Medical Service - Enfield Fire Company (volunteer) & Bangs Ambulance

The Enfield Fire Company includes Emergency Medical Technicians (EMTs), life support, and critical care services. Bangs Ambulance Service provides advanced life support and critical care transport.

- Hospital Service - Cayuga Medical Center

Cayuga Medical Center serves Tompkins County directly and is located in Ithaca, about 11 miles from the wind project site. In addition, helicopter services operating out of Seneca Falls, Marcellus, Canandaigua, Syracuse, and Sidney, New York, and Sayre, Pennsylvania are available through the 911 dispatch center at Tompkins County Department of Emergency Response.

3.0 Emergency Procedures – Construction

3.1 Initial Training

Prior to the start of construction, a meeting will be held with the General Contractor for the project, and local emergency response providers to establish their responsibilities. The Project Operator will also be responsible for communicating hazards to employees and contractors; establishing an accident/injury reporting procedure, as well as protocol for employees to report significant “near- miss” incidents; and conducting emergency response drills to test the effectiveness of emergency communications and response systems and procedures. These procedures will be followed throughout both construction and operation. Regular meetings and coordination with local emergency service personnel will be held as needed to review and monitor construction progress.

3.2 Project Operator Emergency Response Team (Construction)

- Emergency Care Provider

The emergency care provider (ECP) will be a person certified basic first aid. The role of the ECP is to administer first aid/CPR to injured person, as needed. At least two ECP’s will be present on the jobsite at all times. An Automatic External Defibrillator (AED) will be available during construction.

- Communicator

The role of the Communicator is to maintain contact with appropriate emergency services and to provide as much information as possible, such as the number injured, the type and extent of injuries, and the exact location of the accident scene. The Communicator will be located as close to the scene as possible to transmit to the emergency care providers any additional instructions that may be given by emergency services personnel en route.

- Site Supervisor

The Site Supervisor will survey and assess existing and potential hazards, evacuate personnel as needed, and contain the hazard. Follow up responsibilities include replacing or repairing damaged equipment, documenting the incident, and notifying appropriate personnel/agencies.

3.3 Emergency Situations and Procedures (Construction)

This Emergency Response Plan covers events that may occur at the Project Site as a result of human error, natural causes, or equipment failure. These include Minor Injuries, Major Injuries, Fire/Explosion, and Project Evacuation.

During construction, the primary events of concern are Minor Injuries or Major Injuries to construction workers on the job site. The primary responder for these events is the ECP who will be supported by the Site Supervisor.

Fire/Explosion and Project Evacuation events, while possible, are less likely during construction. The same procedures detailed under the Section 3.4 for Project Operation would apply during construction for Fire/Explosion or Project Evacuation events.

3.3.1 Minor Injuries

If a minor medical incident occurs (small cuts, abrasions, etc.) ECP personnel should:

- Perform first aid, as necessary; and
- Consult the accident/injury reporting procedure to report the incident to the appropriate personnel.

3.3.2 Major Injuries

If a major medical emergency exists, including the need for hospitalization or emergency services, personnel should:

- Call 9-1-1, then contact the designated Site Supervisor;
- Consult the emergency phone number list and request assistance immediately;
- Perform first aid/CPR, as needed;
- Stabilize the injured; decontaminate if necessary, and extricate only if the environment of the injured/ill person is dangerous or unsafe and if the rescuers are appropriately protected from potential hazards that might be encountered during the rescue;
- Prior to arrival of emergency services, communicate directly with the 911 operators to provide information to be relayed to emergency responders so they may determine the most appropriate way to transfer the injured person to the hospital, and prepare for appropriate response to any identified hazards;
- When site emergency services personnel arrive, communicate all first aid activities that have occurred, and any hazard mitigation that has occurred;
- Transfer responsibility for the care of the injured/ill to the site emergency care providers; and
- Consult the accident/injury reporting procedure to report the incident to the appropriate personnel

Enfield Volunteer Fire Company is not responsible for any rescue activity at heights in relation to wind turbines. This is performed by Project staff trained in turbine rescue. Ambulance service would be provided by whichever ambulance Tompkins County Dispatch sends.

4.0 Emergency Procedures – Operation

Ongoing communication between the Project Operator, Town officials and police, fire, and emergency services officials will help assure adequate levels of protection for potential emergency situations related to the Project.

4.1 Training and Safety Procedures

An employee safety manual will be incorporated into the overall operating and maintenance policies and procedures for the Project. Normal operating safety procedures will include the following components:

- Initial and refresher training of all operating personnel (including procedures review) in conjunction with local fire and safety officials.
- Preparation of and regular updates to accident/injury reporting procedures, including sharing with local emergency providers.
- Regular inspection of transformer oil condition at each wind turbine step-up transformer.
- Regular inspection of all substation components.
- Regular inspection of fire extinguishers at all facility locations where they are installed.
- All Project vehicles will be equipped with firefighting equipment (fire extinguishers and shovels) as well as communications equipment for contacting the appropriate emergency response teams.
- The MSDS for all hazardous materials on the Project will be on file in the construction trailers (during construction) and the O&M building (during operation).

4.2 Project Operator Emergency Response Team (Operation)

- Operations Supervisor

The Operations Supervisor will survey and assess existing and potential hazards, evacuate personnel as needed, and contain the hazard. The Operations Supervisor will also maintain contact with appropriate emergency services and to provide as much information as possible regarding the emergency situation or injuries. Follow up responsibilities include replacing or repairing damaged equipment, documenting the incident, and notifying appropriate personnel/agencies, including Town personnel.

4.3 Emergency Situations and Procedures (Operation)

This Emergency Response Plan covers events that may occur at the Project Site as a result of human error, natural causes, or equipment failure. These include Minor Injuries, Major Injuries, Fire/Explosion, and Project Evacuation.

During project operation, the primary events of concern are Fire/Explosion, and Project Evacuation. The primary responder for these events is the Operations Supervisor.

Minor or Major Injuries to operations and maintenance staff, while possible, are less likely during operation. These would be handled by the Operations Supervisor, as ECPs will no longer be available on site on a regular basis.

4.3.1 Fire or Explosion

Turbine operations will be monitored 24 hours/day by a remote operations center in Schenectady, NY. Permanent on-site maintenance crew is not anticipated. However, a local project manager (Operations Supervisor) will be available on-call in case of emergency.

Effective human intervention at the time of a fire or explosion at the site of a wind turbine is often hampered by the extreme heights of wind turbine nacelles [the structure at the top of the wind turbine tower just behind (or, in some cases, in front of) the wind turbine blades. The nacelle houses the key components of the wind turbine, including the rotor shaft, gearbox and generator.] The towers are designed with internal fire suppression systems that will automatically activate if a fire escapes the nacelle.

In the event that a fire escapes the nacelle, personnel should:

- Notify the Enfield Fire Company, via 9-1-1 Center, to make them aware of the situation;
- Use water to saturate the ground to prevent spreading;
- Allow the tower to “burn-out”;
- Consult the accident/injury reporting procedure to report the incident to the appropriate personnel.

Local fire departments do not have the specialized equipment necessary to respond to a fire should one occur in the nacelle of a Project turbine. Generally, any emergency/fire situations at a wind turbine site or substation will be the responsibility of the Project owner/operator and/or the substation owner/operator. Construction and maintenance personnel (and properly trained and equipped regional responders) will be trained and will have the equipment to deal with emergency situations that may occur at the Project Site (*e.g.*, tower rescue, working in confined spaces, high voltage, etc.).

As such, the Enfield Volunteer Fire Company is not responsible for firefighting activities on any portion of wind turbines. A fire in the nacelle is allowed to burn out by itself, as it cannot be fought from the ground. Local fire professionals are responsible for keeping the public at a safe distance, and ensuring no ground fires start from any falling debris. This approach is consistent with that taken by wind projects across New York State and the US generally.

Maintenance and ancillary buildings will meet all federal, state and local building and safety codes. This includes the presence of fire emergency equipment, such as fire alarms (pull boxes) and fire extinguishers. Building evacuation procedures will also be established and posted in easily visible areas. I

In the event of a fire in an ancillary building, personnel should:

- Use fire alarms to initiate building evacuation procedures;
- Call 911 to notify the Enfield Fire Company via, the 9-1-1 Center
- Use onsite fire extinguishers to contain the fire, within reason

Additional Information

This text is from the BOWF DEIS and contains useful information. Note: The text has been updated for the current wind turbine model.

This Fire Prevention and Control Plan is provided in compliance with the Town of Enfield Local Law #1 of 2009, the Wind Energy Facilities Local Law. Effective fire prevention and control is effected by a combination of appropriate technology, regular maintenance to prevent problems from occurring, and also regular training and communication of local and project personnel in the event of a fire. This plan examines all three areas to show how Black Oak Wind Farm LLC will maintain a safe environment for workers, neighbors, and visitors to the proposed Black Oak Wind Farm (Project).

Appropriate Technology

Modern wind turbines are highly engineered machines, in which many advances have been made in the past decade. They are continuously monitored remotely, so that any time there is a malfunction in the turbine's operation, it is detected nearly instantaneously by the SCADA system and relayed to various monitoring facilities. Most faults cause the turbine to shut down automatically, and it needs to be restarted by a technician once the cause of fault is remedied. This is a first level of defense against fire. Most of the fires in wind turbines to date have happened in older machines with much less sophisticated control and prevention strategies employed.

The primary cause of fires in wind turbines is lightning strikes, and the turbine chosen for this Project, the GE 2.3-107 comes standard with LPL1 lightning protection, the highest level of lightning protection available today. This helps to minimize likelihood of fire in the turbine to begin with, since the lightning strike is diverted to ground through a network of ground cables throughout the turbine, including down the length of each blade, down the tower, and on the nacelle body itself. There is also a series of surge protection devices inside the nacelle to prevent over-voltage from sparking electrical failures that could lead to fire.

The turbine towers are made entirely of steel, with internal ladders made of steel and aluminum. There are three floors at the joints between tower sections, preventing any burning material from falling down inside the tower. The only non-metallic item inside the towers are the electric cables running from top to bottom, which are sheathed in fire-retardant materials. The possibility of fire spreading within the structure is highly unlikely.

The Project is also considering purchasing an additional fire protection system from Firetrace International, LLC, which provides fire control devices in individual turbine components such as the electrical cabinets and converters.

Maintenance

In addition to equipment which discourages fire in the first place, a rigorous maintenance program will be employed to prevent problems before they occur. This is consistent with current industry standards of maintenance known as CMS, Condition-based Monitoring Systems. In the nacelle, there is continuous monitoring equipment which ensures temperatures do not rise beyond normal operating temperatures. Over-temp alarms cause the shut-down of the turbine, which can be effected with or without electricity inside the turbine. Regular maintenance and inspections on all turbine components is standard practice. The transformer at the base of each turbine is a self-contained unit which is extremely unlikely to combust. Regular inspection of transformer function and oil quality is part of standard maintenance protocols. The substation will also undergo regular inspections by maintenance personnel. All maintenance vehicles will have ABC fire extinguishers on board, and the ABC and CO₂ fire extinguishers inside the turbines themselves will also receive regular inspection.

The ground around turbines and ground-based support structures will be maintained in low vegetation to minimize flammable material. Refuse will be kept to a minimum for the same reason.

Other useful information:

- Each turbine has a transformer at the base of it, containing ~300 gallons of mineral oil in a steel cabinet. Each turbine has an electric generator in the nacelle turning the rotational motion into electricity, but there are no gasoline/diesel generators on site and no batteries or fuel.
- The flammables in the nacelle are hydraulic and gear oil, synthetic rubber seals and hoses, and the fiberglass housing on the unit. In the base of the tower is an electronic control cabinet that could potentially burn as well.
- No chemicals are stored on site.
- The agent and delivery method employed in the internal fire suppression system is 3M Novec 1230 Fire Protection Fluid, with direct and indirect release systems depending on configuration. Self-contained tubing system in place in turbine distributes the fire suppression fluid.