BOWMAN WIND EMERGENCY RESPONSE PLAN

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Turbine and Battery Energy Storage Facility Shut-down During Emergencies

At the Bowman Wind Project (Project), each turbine, battery energy storage facility (BESF), and the substation will have redundant automated systems that shut the equipment down when a fault condition is detected. Human intervention will not be required.

In addition to the automated systems, Apex Clean Energy (Apex) utilizes a 24/7 365 Remote Operation Control Center (ROCC) connected to its facilities that also has control capabilities with individual turbines, groups of turbines, the BESF and the substation breakers to isolate the affected component(s) in an emergency. Other Operators will have a similar type of control center.

The Project will also have on-site technicians that will be trained to provide guidance regarding the Project's facilities to the local emergency Response Personnel during an emergency in the unlikely event areas beyond the wind farm or BESF components could be affected. No specialized emergency response equipment will be required for coverage of this facility.

Emergency, Fire, and Explosive Hazards

Unlike thermal power plants, wind power facilities pose minimal explosion or fire potential, as there is no need to combust fuel to generate power. However, as with any major construction undertaking, construction of the Project does present some minimal fire risks.

Fire risk mitigation starts with facility design, especially with electrical design, which needs to comply with the latest National Electric Code (NEC), National Electric Safety Code (NESC) and National Fire Protection Agency (NFPA) standards.

Emergency Preparedness Training

Bowman Wind will hold a pre-construction coordination meeting with Bowman County's identified Response Personnel and Project contractors prior to the start of Construction. The date of the Initial Training (described below) will be discussed along with identifying the attendees of the training.

Each year during the operating life of the Project, the site operation team shall check-in with Bowman County Response Personnel to determine what form of emergency drills (in-person, on-line, or other options that may become available over the life of the Project) are appropriate to train and coordinate efforts with local emergency responders.

The Initial Training shall provide training to local Response Personnel in the Project area for emergency response actions pertaining to a wind farm and BESF. This program ensures that Response Personnel are prepared to assess and respond to incidents that may occur at or near a BESF and wind farm. Training includes hazard identification, recommended protocols for maintaining materials and safety data sheets for the specific facility, and emergency response planning. Training would be provided annually if requested by the Response Personnel.

Fire and Explosion Sources and Mitigation Measures

Lightning-induced fires affecting wind project components are rare, but regardless, both the wind turbine generators and the substation are equipped with specially engineered lightning protection systems. As is the case with almost any complex machine, there is some potential for fire inside the wind turbine generators. With the types of modern wind turbines proposed for the Project, however, turbine malfunctions leading to fires in the nacelle are extremely rare. The turbine-control system detects overheating in turbine machinery, and internal fires would be detected by these sensors. The machines would shut down immediately and send an alarm signal to the central SCADA system, which would notify operators of the problem by cell phone or pager.

Like most electrical components, lithium-ion batteries are flammable, but modern BESF employ effective methods for preventing and suppressing the risk of fire. There are four primary strategies that BESF designers utilize to minimize fire risk at BESF:

- Prevention: Components built into batteries and BESF that will minimize risk of ignition. Battery Management Systems (BMS) will detect cells with irregular voltages, elevated temperature, and other erratic characteristics and disable the cell or module to prevent the propagation of those errors to other battery cells. Some manufacturers also provide a sacrificial fuse to provide further mitigation against battery fires. These fuses are designed to melt and permanently isolate the problematic cell from the entire system.

The batteries are also cooled using liquid cooling systems to allow for more efficient and effective cooling. The BESF will also include standard ventilation to prevent a build-up of gasses within an enclosed container. Preventing such build-up of gasses will create a less dangerous environment should a fire or thermal event occur. Vents are passive and provide constant ventilation of any exhaust gases, which will easily dissipate once vented and therefore will not be dangerous in the outside air.

- Compartmentation: All BESF systems are packaged in a highly conductive thermal compound that is meant to transfer heat from the battery cells to the liquid cooling medium. While this methodology has proven to be very effective in cooling the batteries via liquid cooling, it also allows for a cell in thermal runaway to spread its destabilizing heat to adjacent cells. In this scenario, the BMS would detect and turn off the overheated module to prevent further heat dissipation.

- Detection: The BMS will monitor voltage, temperature, and variations in other characteristics of the BESF to determine any signs of instability or irregular behavior. The BMS will then individually shutdown the modules or racks to reduce the risk of propagating these issues to other cells. The battery containers also contain hazardous and/or explosive gas sensors, which can detect the presence of gases such as, but not limited to, hydrogen, carbon monoxide, and methane. In the presence of these gases, the BMS will shut down the BESF and trigger an alarm detailing the event.

- Suppression: In the case of a thermal runaway event, or when the heat generated by chemical reactions within a battery exceeds the amount of heat that is dissipated to its surroundings, the BESF will automatically and simultaneously shut down the batteries, trigger the fire suppression system, and alarm the system owner and Response Personnel of the fire event. The composition of the fire suppression system will vary between manufacturers, however, they will all employ a dry agent and/or water suppression strategy. The goal of the fire suppression strategy is to extinguish or control any open flames to the best ability of the container system until the proper safety team can arrive on site and manage the situation. Each BESF system will also come with a First Responder's Guide to provide the optimal fire containment and extinguishment strategy for lithium-ion battery fires.

In terms of Project decommissioning, the potential fire risks are similar in nature to those during Project construction but are lower in probability.

<u>Toxic Fumes Due to Fire</u>

Smoke, of any kind, can be toxic and smoke from batteries is no exception. Use of a positive pressure breathing apparatus is recommended whenever responding to BESF fires, which is consistent with what would be used for responding to any typical household

fire. A BESF is required to be designed such that the fires do not propagate to the adjacent combustible units. If a battery fire is involved, consider an initial downwind evacuation for at least 100 meters (330 feet), per Department of Transportation recommendations. Based on the wind conditions and the extent of fire, the first responders will determine if further evacuation is required.

On-Site Emergency Plans

An on-site Emergency Action Plan (EAP) shall be prepared to protect the public health, safety and environment on and off the Project site in the case of a major natural disaster or industrial accident relating to or affecting the Project. The Project shall prepare the EAP and be responsible for updating and implementing the plan with its construction and operations teams in coordination with the Response Personnel. The plans will describe the emergency response procedures to be implemented during various emergency situations that may affect the Project or the surrounding community or environment.

The EAP described in this section includes an outline of the details that will be included in the emergency plans to be developed prior to the construction and operating phases of the Project. This outline is based on the Applicant's experience in operating other similar Projects. For all Projects, the key element of an effective emergency and safety plan is the ability to communicate. Therefore, all operations team leaders shall be equipped with two-way short-band radios and cellular phones.

During the Project's construction and start-up period, the EAP will be updated to conform to manufacturer and vendor safety information for the specific equipment installed at the Project.

<u>Events Covered by the Emergency Action Plan</u>

The EAP will cover multiple events that may occur at or near the Project site by natural causes, equipment failure or by human mistake. The following is a list of potential events that will be covered by the EAP.

- Personnel injury;
- Construction emergencies;
- Facility evacuation;
- Fire or explosion;
- Hazardous Materials including gases and toxic fumes;
- Floods;

- Extreme weather abnormalities;
- Evacuation.

The Project O&M group and third-party contractors will receive annual emergency response-and safety training to assure that effective and safe action will be taken to reduce and limit the impact of an emergency at the Project site.

Information Signs

Bowman Wind will post information signs (turbine placard) at each turbine that will include the turbine ID number and the phone number to the owners' operation center (24/7 Operations desk). Signage will also be placed at the substation, BESF, and O&M buildings with the same contact information. If called, the operator will take action notifying the on-call technician and if needed initiate the EAP. The Response Personnel and Bowman County Commissioners will be given an up-to-date map prior to construction showing the turbine ID numbers in relation to all public roads.

Handling of Hazardous Material During Construction, Operation, and Decommissioning

Construction

Diesel fuel is the only potentially hazardous material that will be used in any significant quantity during construction of the Project. It will be used for operating construction equipment and vehicles. Construction of the Project will not result in the generation of any hazardous wastes in quantities regulated by State or Federal law. During construction, the primary wastes generated will be solid construction debris such as scrap metal, cable, wire, wood pallets, plastic packaging materials and cardboard. This waste will be accumulated on-site until it is hauled away to a licensed transfer station or landfill.

Operations

Operation of the Project will not result in the generation of regulated quantities of hazardous wastes. As no fuel is burned to power the wind turbine generators, there will be no spent fuel, ash, sludge or other process wastes generated. The primary type of waste generated by the Project's operations will be municipal solid waste generated at the O&M facility, consisting of typical office wastes (paper, cardboard, food waste, etc.), which will be stored in a dumpster until it is collected by the local solid waste collection service provider. The periodic changing of lubricating oils and hydraulic fluids used in the individual wind turbine generators will also result in the generation of small quantities of these materials. These waste fluids will be generated in small quantities because they need to be changed only infrequently and the changing of these fluids is not done all at

once, but rather on an individual turbine-by-turbine basis. These waste fluids will be stored for short periods of time in appropriate containers at the O&M facility for collection by a licensed collection service for recycling or disposal.

Decommissioning

The decommissioning of the wind project will entail removing Project components in accordance with the Commission's decommissioning rules. Once facilities are removed, they will either be sold as scrap, recycled, or hauled to a waste management facility.

With respect to the BESF, the decommissioning phase will begin with an assessment of which cells can be reused and which cells will need to be disposed. After delineating the useful life of the cells, the state of charge of the BESF will be drawn down to the safest allowable level prior to disconnection and disassembly of the BESF. The BESF will then be removed from the container either on or off site.

The U.S. Resource Conservation and Recovery Act (RCRA) regulates the generation, transportation, treatment, storage, and disposal of the batteries as hazardous solid waste. All decommissioning operations will conform to the regulations applicable to the removal and recycling of the batteries. All batteries will be managed as hazardous waste and subject to Universal Waste Regulation per the U.S. Environmental Protection Agency (EPA), which created those regulations to promote the collection and recycling of the batteries.

In addition to the removal of the BESF, recycling records of the removal, shipment, and disposition of the batteries will be retained that will include tracking of all offsite shipments. These records will be maintained for three years. During the post-decommissioning and clean up phase, the balance of plant equipment will be assessed for stability and useful life and disposed of accordingly. Balance of plant will include power conversion system, breakers, step-up transformers, and other auxiliary equipment for the BESF. The batteries and the balance of plant equipment will be properly recycled by using established and certified recycling and/or second use facilities.