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MIDAMERICAN ENERGY COMPANY
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Woodbury County Iowa
620 Douglas Street
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Woodbury County Board of Supervisors:

MidAmerican is responding to your requests related to any safety information similar to the Nordex information that was provided to the board – what we believe you refer to as safety data sheets. From what we've heard recently, you are seeking written recommendations from turbine manufacturers regarding what they consider to be a safe distance from the wind turbine during a lighting or severe weather event. MidAmerican has not seen a set of setback recommendations from the turbine suppliers, but reached out again and the following are comments from the three turbine manufacturers that MidAmerican has in operations:

GE Vernova: *Based on our initial review, GE Vernova is not aware of any applicable standard or industry regulation related to lightning that would be more restrictive than general siting considerations that MEC is familiar with, which look at potential hazards within a distance of 1.1 x tip height (e.g. ice throw, falling objects, blade failure, etc.).*

Vestas: *During severe weather or an ongoing serious incident, technicians are instructed to clear the area to a minimum radius of 500 meters and evacuate upwind of the impacted WTG.*

Siemens Gamesa Renewable Energy: See attached Severe Weather Guidelines

Reiterating comments we have provided previously, MidAmerican has been safely operating generation and serving customers in the Woodbury County area for decades. We rely on pertinent information and wind turbine operating history, when siting wind turbines, and after two decades of operating wind turbines are happy to again report a perfect safety record with the public, and we are unclear why you think MidAmerican would veer from decades old safe operations and service to your community with the addition of anything less than a safe wind generation project. We have continuously asked, that you not only consider these facts, but reach out to non-MidAmerican personnel from other Iowa counties with wind generation and get their safety perspective regarding wind turbines – we have yet to hear or see in the record- what you have to report back on after those conversations. MidAmerican also remains ready and willing to put you in touch with safety personnel from each turbine manufacturer, as was offered at the hearing last week, as we believe this will be valuable information in your decision

making – since you appear to be relying on one section of a document from one manufacturer in your decision making.

Sincerely,

Kelsy Ballard
Director, Project Development

Attachment: HSENA-102377 Severe Weather Guidelines- Wind Farms.

I. PURPOSE

The purpose of these guidelines is to provide information on proactive actions to be taken by wind farm supervision to prevent harm to personnel on their sites due to severe weather.

II. SCOPE

These guidelines apply to all SGRE Onshore (ON) wind farms and SGRE Service (SE) onshore wind farms in the USA and Canada.
These guidelines do not apply to SGRE Offshore (OF) Projects and SGRE Service (SE) offshore wind farms.

III. THUNDERSTORMS

Each wind farm shall have a system for tracking personnel who are working in the WTG on the site and a means of communicating with each team.

1. For sites that have Earth Networks or equivalent weather tracking service and site management are on site (e.g., normal workdays):
    a. If lightning strikes within 50 miles (80 km) of the wind farm center point (weather app tracking point), the following applies:
        i. Work tasks that are actively being done can continue.
        ii. Do not start a new task that cannot be stopped in a timely manner if the "evacuate the WTG order" is issued.
        iii. If the lightning strike notification is in effect at the start of the shift, the teams will remain in compound / O&M building area.
    b. If lightning strikes with 30 miles (48 km) of the wind farm center point, the following applies:
        i. Work will be stopped, and the WTG evacuation order will be given.
        ii. All personnel will evacuate the WTG and seek shelter in a safe location (e.g., passenger vehicle) until the all-clear is given.
    c. **For wind farms that are geographically large (e.g., span 20 miles (32 km)), if site management is at the wind farm and consults the weather service / app to observe the location of the lightning strikes,** one of follow scenarios is possible:
        i. Technicians are working in WTG's that are on the opposite side of the wind farm where the lightning strikes are closest, and their WTG's are not within 50 miles (80 km) of the lightning strike(s).
            1. In this case, the crew can continue work as normal provided the site management continues to closely monitor the storm direction to provide appropriate guidance to the team.
        ii. Technicians are working in a WTG that puts them within 30 miles (48 km) of lightning strikes reported in the 50 mile (80 km) zone.
            1. In this case the crew will be ordered to evacuate.
        iii. Technicians are working in the middle of the wind farm.
            1. Follow normal procedures.
2. For weekend or out of normal work hours work (e.g., without onsite ground personnel to monitor weather conditions):
    a. If the team has access to Earth Networks or other weather app:
        i. Follow normal protocols.
    b. If the team does not have access to Earth Networks or other weather app:
        i. If they see lightning and / or hear thunder, evacuate the WTG.
3. Once an evacuation order has been given, a minimum of 30 minutes must pass without additional lightning strikes within the 50 mile (80 km) radius before the teams can be authorized to reenter the WTG's.
    a. If additional bands of thunderstorms are moving in the direction of the wind farm / WTG, the evacuation order time period can be extended until the weather radar / forecasts indicate that the teams can enter the WTG and complete assigned tasks.

Personnel trapped in WTG
If anyone becomes trapped in a turbine during a thunderstorm, they should move to a tower platform preferably without an electrical cabinet.
They should not stay in the nacelle or on the yaw deck.
They should stay in the middle of the platform and not touch the walls.
They should notify their site supervision and others of their location via radio or cell phone.
They should not touch the walls of the turbine until at least 15 minutes after the thunderstorm has passed.

IV. TORNADOS

Tornadoes are more frequent during the spring and summer months, but they can occur at any time of the year, especially during or near the end of a thunderstorm. Tornadoes can be deadly.

For wind farms that are in areas that are likely to have tornados, SGRE should work with the customer to have tornado shelters installed on site.

Each wind farm shall have a system for tracking personnel who are working in the WTG on the site and a means of communicating with each team. At a minimum two forms of communication should be available on the crew, preferably radio as a primary and cell phone as a secondary.

Site management shall use various methods (TV, radio, internet, etc.) to be aware of advisories related to tornado development for the area.

Once a storm advisory has been issued, plans shall be made to continue monitoring for future updates.

Tornado Watch
When a Tornado Watch is announced, tornadoes are possible due to conditions. Typical watches cover about 25,000 square miles, or about half the size of Iowa.

When a Tornado Watch is issued, site supervision shall contact all personnel on site.

Site management shall continue monitoring for forecast updates.

Site supervision will decide on what specific actions to take based upon the reports.

Options are:
1. Continue to work as normal while monitoring the weather and communicating with the crew leads; OR
2. Have all personnel exit upper areas of the tower and await instructions from their location; OR
3. Have all personnel exit the tower and return to the office/compound and await instructions. While waiting, secure all outdoor objects and equipment; lower mobile crane booms, etc. OR
4. Account for all personnel and have them evacuate the site.

Tornado Warning
When a tornado warning is issued for the wind farm area, a tornado has actually been sighted, or has been indicated by radar, and this or other tornados may strike in the wind farm's vicinity. Public warnings will come over the radio, TV, or by the Civil Defense warning system. If the wind farm's area receives a warning, remain calm.

Actions to take:
1. Site supervision will account for all personnel and have them take shelter in the on site tornado shelter, if available, or evacuate the site.

2. If a crew is still in a wind turbine, the basement of the tower can be used as a shelter.

3. If personnel are outdoors, look for a sturdy building and get inside:
   a. If personnel can't do that then they should go to the nearest ditch or gully and lie flat.
   b. If personnel see a tornado, they should take shelter as soon as possible.

4. If personnel are inside a building:
   a. Stay away from the perimeter of the building and exterior glass.
   b. Close drapes, blinds etc., if time permits.
   c. Go to the lowest level in the building to an interior room or basement, if possible.
   d. Sit down and protect themselves by putting their head as close to their lap as possible or kneel protecting their head.
   e. They should not go to upper floors or outside the building.
   f. Keep your radio or television tuned to a local station for information.

Note: If the site owner has an emergency evacuation plan which requires evacuation sooner than the Siemens Gamesa plan, follow the owner's plan.

V. HURRICANES

Hurricane Watch Issued

Hurricanes start as tropical storms that are tracked for days before their weather actually affects a wind farm.
Early warning and accurate storm tracking are crucial to preventing injuries to personnel.
Site management shall track tropical storms that have the possibility of impacting their wind farm. There are various methods to be used (e.g., internet, TV, radio, weather service).
A hurricane watch is issued if the hurricane force winds (74 mph [119 k/h] or greater) are expected to reach landfall within **48** hours.

If the wind farm is in a hurricane watch area / zone, site management shall ensure the following occurs:

- Monitor radio, television, and computer for further information
- Follow the precautionary actions
  - Check and verify adequacy of essential emergency equipment and supplies.
  - Begin to secure or store exterior equipment. No loose tools or equipment should remain in external areas.
  - Assemble equipment and materials to protect windows and other glass by boarding up or taping and to protect vulnerable doors by bracing.
  - Fill vehicle fuel tanks and obtain fuel for the emergency generators, if applicable.
  - Begin storing water in containers for emergency use or obtain supplies of bottled water.
  - Update all business records that may need to be removed or protected and computer data that will need to be backed up.
- During storm season, ensure that all vehicles have at least a 50% fuel level at all times.
- Contact everyone on site that the site is under a hurricane watch.

Hurricane Warning Issued

A hurricane warning is issued if the hurricane force winds (74 mph [119 k/h] or greater) are expected to reach landfall within **36** hours.

When warning is issued by the Local Weather Service, the wind farm personnel in hurricane evacuation zones should be evacuated promptly when evacuation is issued by local officials. Remember that hurricane evacuation routes can be closed by high winds or water many hours before a hurricane hits. If local officials do not recommend evacuation of the area, the wind farm may still experience high winds and heavy rain generated by the hurricane.

If the wind farm is in a hurricane warning area / zone, site management shall ensure the following occurs:

- Follow the proactive actions
  - Relocate vital business records and valuables to a safe location out of the area being evacuated. Backup computerized records and protect the backup copy.
  - Relocate expensive equipment out of the area or move it to the most heavily constructed interior area of the facility. In the areas that could be subject to surge flooding, move equipment to levels

above the possible surge level. Cover vulnerable equipment which cannot be moved with plastic sheeting to minimize damage in the event of roof leaks or broken windows.
    - Brace inward opening exterior doors and any rollup doors.
    - Close, lock, and board up large windows and glass doors. Board up or tape small windows.
    - Turn off electricity and other utilities.
- Prepare for loss of utilities for up to 72 hours if no evacuation order issued.
- If local officials recommend or order an evacuation of the wind farm, close the wind farm.
    - Notify all on site personnel of the evacuation order status.
    - Ensure that personnel have departed the facility before evacuation routes become impassable due to flooding or high winds.

During The Hurricane:

It is assumed the project site will be closed.

After The Hurricane:

After the winds are below 74 mph (119 k/h), site management and HSE should begin contacting site personnel to ensure they are safe.

Evacuated areas reopening – general comments:

- If personnel have evacuated the wind farm, they may have difficulty returning quickly because roads may be damaged, blocked by debris, or flooded in low lying areas.
- Access to storm damaged areas may be limited by local law enforcement personnel to keep people out of areas with dangerous conditions, to facilitate rescue and recovery work, and to limit access to unoccupied properties.
- Initially, entry to storm damaged areas may be limited to search and rescue personnel, law enforcement personnel, firefighters, utility crews, and road clearing teams. Once it is reasonably safe, property owners and essential employees will be cleared to enter the area, but may require a permit or pass, or be included in an access list maintained by the city. Contact the local emergency management office to determine the procedures for returning to storm damaged areas.

Site management shall use the radio, television, or internet to obtain instructions before attempting to return to the wind farm.
Once cleared by local governmental officials and before re-opening the wind farm to all personnel, site management shall select a small team of people to make a tour of the site including the below listed items:

- Look for obvious structural issues.
- Check for downed or dangling electrical power lines.
- Stay away from downed or dangling power lines.
- Report all damage observations to management.
- Do not attempt to cross any fast flowing or newly formed water courses
- Be aware of potential for exposed sewerage or contaminated water supplies, leaked chemicals etc
- Be aware of dangers from wild animals who may have been affected

After the tour of site has been made and the site is safe for general personnel, notify site personnel to return to the wind farm.

Document information

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