Note: No one Wind Emergency Response Plan (WERP) can be designed to address all conditions. Use this document as a basic guide to developing your own WERP. Items that do not apply to your facility can be omitted; other items can be expanded, or added, as appropriate.

**Revision Date:**

**Company Name:**

**Location Name:**

**Address, City, State:**

**Index-Record Number:**

**Account Number:**

**Table of Contents**

1. **Purpose**
2. **Site Wind Hazard**
3. **Authority to Activate Plan**
* **Facility Contacts**
* **Local Emergency Contacts**
* **Key Contractors/Vendors**
1. **Wind Monitoring**
2. **Wind Action Plan**
* **Facility Shutdown**
* **Wind Mitigation**
1. **Fire Hazard Mitigation**
2. **Recovery Plan**
* **Fire Protection Restoration**
* **Restoration of Operations**
1. **Post-Event Review**
2. **WERP Training Exercises**
3. **References**
4. **Attachments (as needed)**
5. **Purpose**

*This WERP is an outline of actions to be taken before, during and after a windstorm event. With proper planning, both property damage and business interruption can be minimized. The plan should be reviewed and updated annually to make sure effective action is taken, as needed. Preparation considers the anticipated wind speed based on predictive probabilities and the facility’s exposure to tropical windstorms such as hurricanes, typhoons, and cyclones.*

1. **Site Wind Hazard**

*Wind hazards are unique and site-specific. Understanding the potential scenarios faced by an individual site provides for the development of plan components that will be most appropriate and with a higher level of success. Consult your local FM Global engineer or wind specialist for assistance in developing your Site Wind Hazard.*

**Provide a high-level description of the wind hazard(s) and likely scenario(s) that includes:**

* Likely weather event(s) that will trigger wind
* Likely advance warning time for each event
* Wind damage expected to key buildings
* Description of critical areas likely to be damaged by wind
* Anticipated business impact

***Describe the areas likely to be affected and where the site is vulnerable to wind damage. Each potential area of vulnerability should be listed (along with any pertinent photos or maps) based on where exposure is most likely. This information will serve as a lead-in to describing the areas to monitor during an event.***

***Assess all potential areas of vulnerability such as windows, doors, lightweight wall cladding, roofing and roof deck materials, and roof-mounted equipment.***

**Areas of Vulnerability**

|  |  |  |
| --- | --- | --- |
| **Building/Area** | **Vulnerability** | **Notes** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. **Authority to Activate Plan**

*The authority to activate the plan is critical, as business operations may be temporarily halted, and access restricted to reduce the overall damage and potential business interruption.*

***Describe who has the ultimate authority to activate response actions. An authorized person, such as a plant or operations manager, should be responsible for each shift, along with an alternate, as needed.***

|  |  |  |
| --- | --- | --- |
| **Authority to Activate Plan** | **Main Phone** | **Alternate Phone** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Additional Contacts**

|  |  |  |
| --- | --- | --- |
| Facility Contacts  | Main Phone | Alternate Phone |
| *Emergency Plan Coordinator* |  |  |
| *General Manager* |  |  |
| *Maintenance Manager* |  |  |
| *Security* |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Local Authorities  | Phone Number | Website/Email |
| *Police Department* |  |  |
| *Fire Department* |  |  |
| *Local Emergency Management Agency* |  |  |
| *National Weather Service Office* |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
|  Key Contractors/Vendors  | Phone Number | Website/Email |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. **Wind Monitoring**

*The plan should indicate when monitoring operations are to begin, the preferred method of monitoring, and who has the responsibility for this critical step. A person or position, with alternates, should be assigned to monitor local conditions on each shift.*

|  |  |  |
| --- | --- | --- |
| Shift | Person/Position to Monitor | Alternate |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

***Resources to monitor weather conditions:***

* (US) National Weather Service: [*weather.gov*](http://www.crh.noaa.gov/lsx/)
* (US) NWS Active Alerts: *weather.gov/alerts*
* (US) National Hurricane Center: *nhc.noaa.gov*
* Local emergency management agency
* Local TV stations
* Local TV station websites for weather radar
* On-site closed-circuit cameras focused on vulnerable points
1. **Wind Action Plan**

*This section must be completed by facility personnel. Items that should be included or considered are listed below. Specific action steps, as well as the events that trigger them (e.g., tropical storm notification, predicted high winds) should be established and documented, along with required staffing and equipment for completion.*

*The trigger point should be based on the time needed to accomplish the response action steps and the advanced warning time available. Sufficient staff to complete all functions in* ***no more than 8 hours*** *is recommended.*

**Facility Shutdown**

Procedure to shut down/de-energize utilities in an orderly manner to reduce ignition sources and damage:

1. Plan for a safe emergency shutdown of operations.
2. Plan for shutdown of utilities (electric, fuel, etc.).
3. Shut down ignitable liquid and flammable gas systems and ensure they will remain stable throughout the storm.

|  |  |  |  |
| --- | --- | --- | --- |
| Building/Equipment | Shutdown Activity | Time Needed | Assigned To |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Windstorm Mitigation**

*Action items are best prioritized considering the value and achievability of the mitigation action within the advance warning window. Some typical examples are provided below. These are organized by time periods before, during, and after the windstorm event.*

1. **Pre-Windstorm (Annual/Seasonal)**
* Determine which company records are vital and make plans to protect/relocate them.
* Maintain ongoing agreements with contractors for supplies and repairs that may be needed before, during, and after a windstorm. These services should include towing and moving large objects, removing debris, and delivering water. If possible, use contractors who are not within potential windstorm areas.
* Order and maintain emergency supplies throughout the windstorm season, including ≥ 5/8” plywood, plastic tarps, waterproof covers, tape, portable pumps, battery-powered devices and batteries, and other hurricane preparedness tools.
* Have straps or other means on hand to brace/anchor yard storage, signs, cranes, and roof-mounted equipment.
* Inspect the facility for leaks or cracks in walls, doors, and windows.
* Conduct an exterior building survey, confirming that (1) roof system and materials are in good condition; (2) roof-mounted equipment is properly secured; (3) perimeter flashing is secured; (4) gutters and drains are in good condition and cleared; and (5) windows and doors are properly sealed.
* Establish an Emergency Response Team that will volunteer to stay on-site during a windstorm event if safe to do so.
* Install any hardware required to facilitate prompt installation of window shutters, plywood coverings or braces for dock doors.
1. **Impending Windstorm (Advisory/Threatening Conditions)**
* Map the windstorm front and stay up to date on the storm’s progress.
* Notify management, staff, and personnel of alert condition and possible facility closure.
* Review and ensure all outside equipment, storage, and other materials are relocated indoors or properly secured.
* Inspect, clean out drains and gutters, and make emergency repairs to drains, gutters, and flashing.
* Check/maintain all necessary backup equipment such as emergency generators and communication devices.
* If an ERT has been designated, ensure they are equipped with proper supplies and equipment (drinking water, nonperishable food, medical supplies, flashlights, communication devices).
* Fill fuel tanks of generators, fire pumps, and all company-owned vehicles.
* Fill fire pump suction tanks or gravity tanks, domestic water tanks and other liquid storage tanks.
* Check and remove all loose debris and objects from parking lots, roofs, open outdoor spaces.
* Confirm emergency generators are functioning.
* Ensure fire protection systems, including the fire pump, are in service and in automatic mode.
* Survey work areas and ongoing projects for possible problems in securing and protecting material.
1. **Impending Windstorm (Watch Conditions)**
* Establish communications touchpoints with corporate, if necessary.
* Continue to monitor the windstorm front and stay up to date on the storm’s progress.
* Implement Flood Emergency Response Plan in accordance with the determined timeline, in applicable.
* Install windstorm shutters/plywood over windows and bracing for dock doors.
* Move extra supplies, fuel, and tools to a secure location.
* Relocate remaining files, records, furniture, and equipment away from windows and dock doors.
* Pre-position portable pumps and any other emergency equipment.
* Isolate, neutralize, or remove from site any chemicals that can react with each other.
* Strap or anchor all roof-mounted equipment to the roof deck, including HVAC units and exhaust vents.
* Recheck gutters, drains, and flashing.
* Anchor portable buildings to the ground and secure cranes.
* Inspect fire protection equipment.
* Protect critical equipment and stock with tarps and waterproof covers.
* Shut down noncritical and nonessential electrical equipment and machinery.
1. **Imminent Windstorm (Warning Conditions)**
* Maintain communication touchpoints with corporate, if necessary.
* Continue to monitor the storm’s progress.
* Make final preparations for ERT (e.g., food).
* Remove or secure any remaining loose exterior items.
* Shut down any remaining nonessential equipment and disconnect noncritical power sources, including main electrical feeds to the facility, if possible.
* Shut off gas to minimize fire loss and protect or shut off other possible flame sources.
1. **During Windstorm**
* Emergency response personnel should stay at the facility only if safe to do so.
* Patrol the property continuously and watch for roof leaks, pipe breakage, fire, or structural damage.
* Constantly monitor equipment that must remain online including boilers, telecommunications, UPS systems, emergency generators, and DC power systems.
* During power failure, turn off electrical switches to prevent reactivation before necessary checks are completed.
* Monitor news sources for storm announcements or updates.
* Update corporate on changes in site condition, if necessary.
1. **Post-Windstorm**

See *WERP Section G: Recovery Plan* below

|  |  |  |  |
| --- | --- | --- | --- |
| Building/Equipment | Mitigation Activity  | Time Needed | Assigned To |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. **Fire Hazard Mitigation**
2. Extinguish or turn off unnecessary open flames or heat sources, including tobacco products.
3. Keep fire protection equipment operational for as long as possible. Use the FM Global Red Tag Permit System to document any shutdown of fire protection equipment.
4. Perform hot work *only* if there are no safer alternatives. Use the FM Global Hot Work Permit System to supervise work being performed on the property. Hot work should be performed only after fire protection systems are restored and combustibles are removed from the hot work area.
5. Provide necessary electrical services, with restoration on an item-by-item basis, only after a thorough check by qualified personnel.
6. Check ignitable liquid storage and flammable gas piping systems for leaks before returning to operation.
7. Check tanks for leaks.
8. Establish a procedure to remove combustible debris as it accumulates.
9. Initiate a continual fire watch until normal operations are resumed.
10. **Recovery Plan**

*This section must be completed by facility personnel. Contact critical contractors and suppliers in advance of the salvage/repair operations, to ensure they will be available when needed. Initial efforts should focus on preventing further loss from complications of the windstorm. Once the site is secure, efforts should focus on restoring the facility operations.*

**Fire Protection Restoration**

*Promptly return fire protection systems to service by taking the following actions:*

1. Run or test fire pump, fire pump driver, and controller. Repair if wind-damaged.
2. Examine the fire pump water source (particularly for open bodies of water) to ensure debris will not enter the pump suction line and sprinkler system.
3. Check the yard main fire protection system and water tanks for washouts.
4. Remove debris from fire protection valve pits.
5. Inspect sprinkler system piping for damage, and repair as needed.
6. Test sprinkler control valves to ensure they are fully open, operable, and undamaged.
7. Check fire protection alarm systems and make necessary repairs.

|  |  |
| --- | --- |
| Building  | Fire Protection Equipment |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Restoration of Operations**

1. Prioritize cleanup actions.
2. Prioritize the rebuilding or replacement of pieces of critical equipment.
3. Contingency planning for prolonged site isolation:
	1. Relocate operations.
	2. Set up temporary or skeleton operation at remote locations.
	3. Document procedures on how production will be made up at other facilities.
4. Call in key personnel and notify contractors to start repairs and/or implement disaster recovery plans.
5. Initiate salvage and cleanup operations by a designated salvage crew. Focus efforts on:
	1. Covering and repairing broken windows, opening driveways and parking lots, repairing roof damage, covering and/or protecting exposed and damaged equipment.
	2. Cleaning roof drains and removing debris from roof decks.
	3. Removing water from buildings. Drying/wiping wet equipment and storage.
	4. Checking open bus bars, conductors, piping, etc., before reenergizing electrical equipment and/or opening gas valves.
6. Separate damaged goods and avoid accumulating excess combustible debris inside buildings.
	1. Designate an outdoor debris pile located away from critical buildings and incoming utilities.
	2. Relocate salvageable and undamaged stock and supplies to a safe area.
7. Complete a survey of the premises for property damage. Take photos or video of damage.
8. Survey for site safety hazards:
	1. Live or downed power lines
	2. Leaking gas or ignitable liquids
	3. Leaking roofs
	4. Topped equipment
	5. Downed or unstable trees
	6. Damage to buildings

|  |  |
| --- | --- |
| Building/Equipment | Restoration Activity |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

1. **Post-Event Review**

*Review the plan after each windstorm event to identify areas for improvement, and to determine if changes need to be made to the site and facility to reduce the magnitude of emergency actions.*

1. **WERP Training Exercises**

*Conduct regular WERP training exercises that involve all staff required to respond. At least once a year, prior to the start of hurricane season, organize a complete dry run to simulate the windstorm event. Preparing for a windstorm event that does not present a severe hazard can be considered an adequate dry run.*

1. **References**

FM Global Property Loss Prevention Data Sheets ([fmglobaldatasheets.com](http://www.fmglobaldatasheets.com))

 Data Sheet 10-2, *Emergency Response*

 Data Sheet 1-28, *Wind Design*

Data Sheet 1-29, *Roof Deck Securement and Above-Deck Roof Components*

 Data Sheet 1-30, *Repair of Wind-Damaged Single- and Multi-Ply Roof Systems*

 Data Sheet 1-40, *Flood*

Data Sheet 1-49*, Perimeter Flashing*

 Data Sheet 1-62, *Cranes*

FM Approvals – Approval Guide ([approvalguide.com](http://www.approvalguide.com))

RoofNav (online resource of FM Approvals) ([roofnav.com](https://www.roofnav.com/Account/Login))

1. **Attachments (as needed)**
2. Facility maps
3. Fire protection valve list
4. Fire protection contractor(s)
5. FM Global engineering, account management and claims contact details
6. List of equipment suppliers
7. List of restoration, repair, and cleaning contractors

**Appendix – Annual Review**

*Review the plan annually prior to the start of hurricane season to verify its contents and that all personnel responsible for its execution understand it. Plan content may also be updated as facility changes occur.*

1. List of personnel involved with training and review of plan.
2. Inspect equipment to be installed prior to a wind event to ensure that all parts such as shutters, dock door braces and related hardware are still available. Replace missing or damaged parts as needed.
3. Date of annual review session.