

Tornado / Severe Thunderstorm

Tornados are a violent rotational windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornado season is generally late March through August, although tornadoes can occur at any time of year. They tend to occur in the afternoons and evenings; over 80 percent of all tornadoes strike between noon and midnight. Occasionally, tornadoes develop so rapidly that advance warning is not possible, increasing the need to remain alert for rapidly changing weather conditions at all times.

Straight-Line Winds define any thunderstorm wind that is not associated with rotation, and is used mainly to differentiate winds from a tornado. Straight-line winds can be as powerful as a tornado and extremely dangerous. Unlike a tornado where debris will be scattered in many directions, straight-line winds will blow debris in the same direction as the wind blows.

Definitions:

Severe Thunderstorm Watch - Conditions are favorable for the development or approach of severe thunderstorms. Stay tuned to NOAA Weather Radio or local radio stations for possible warnings.

Tornado Watch - Conditions are favorable for the development or approach of severe thunderstorms and tornadoes. Stay tuned to NOAA Weather Radio or local radio stations for possible warnings.

Severe Thunderstorm Warning - A severe thunderstorm (a storm with winds in excess of 58 miles per hour or with 3/4" or larger hail, or both) is indicated by Doppler radar or reported by a trained Skywarn spotter. Take cover immediately in a sturdy building. Stay away from doors, windows, and water faucets. Do not use the telephone or appliances unless it is a life-threatening emergency. Listen to a battery powered radio tuned to NOAA Weather Radio or local radio stations to keep informed.

Tornado Warning - A tornado or mature funnel cloud has been detected by Doppler radar or has been reported by a trained Skywarn spotter. Take cover immediately in a sturdy building. Go to the lowest floor, preferably into a small windowless room and crouch under a sturdy desk or table. Stay away from doors, windows, and water faucets. Do not use the telephone or appliances unless it is a life-threatening emergency. Listen to a battery powered radio tuned to NOAA Weather Radio or local radio stations to keep informed.

Enhanced Fujita-Pearson Tornado Scale

F-0: 65-85 mph, chimney damage, tree branches broken

F-1: 86-110 mph, mobile homes pushed off foundations or overturned

F-2: 111-135 mph, considerable damage, mobile homes demolished, trees uprooted

F-3: 136-165 mph, roofs and walls torn down, trains overturned, cars thrown

F-4: 166-200 mph, well-constructed walls leveled

F-5: over 200, homes lifted off foundation and carried considerable distances, autos thrown as far as 100 yards

Danger Signs:

- An approaching cloud of debris can mark the location of a tornado even if a funnel is not visible.
- Before a tornado hits, the wind may die down and the air may become very still.
- Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

City of Ann Arbor Warning System

Three systems have been established by the City of Ann Arbor to provide with critical information during a crisis.

1. Emergency Alert System (“EAS”) consisting of NOAA All Hazards Radio, local broadcasters and cable system operators, and Washtenaw County’s VHF warning channel for citizens with police scanners.
2. Local Alert System (“LAS”), which has the capability to interrupt the Comcast Cable system in Washtenaw County. When activated, your television screen will turn blue and you will hear a live audio warning. The system will only interfere with Comcast channels 2 – 76.
3. Outdoor warning sirens. If a siren activates (except for monthly testing on the second Tuesday of the month at 1:00 PM, from March through November), it means everyone should go indoors and immediately tune into one of our local “EAS” outlets for official information. These are the three main reasons for siren activation:
 - Significant severe weather has been detected such as a tornado or a severe thunderstorm with damaging winds confirmed to be in excess of 70 MPH.
 - There is a hazardous material accident in your community that may require your immediate action
 - An important announcement about homeland security has been issued that everyone in the community should know about as soon as possible

Never assume that you automatically know what the threat is when a siren activates. You should always go indoors and tune in to local EAS outlets to find out more.

City of Ann Arbor Outdoor Warning Siren Locations

The City of Ann Arbor has twenty-two (22) siren locations throughout the City Limits. The sirens are tested every second Tuesday of the month at 1:00 p.m., with one (1) minute of steady wailing. Testing of the sirens is performed from March through November.

1. W. Ellsworth and Varsity Drive
2. Eisenhower Parkway and S. Main Street
3. Verle Avenue and Eddy Street
4. Platt Road and Washtenaw Avenue
5. Page Avenue and Jewett Avenue
6. Las Vegas Drive and Runnymede Boulevard
7. Koch Avenue and Third Street
8. Geddes Avenue and Geddes Heights Drive
9. Fuller Court West of Huron Parkway
10. Hubbard Street and Green Road
11. Murfin Avenue and Hayward Street
12. Summit Street and Hillcrest Drive
13. Dexter Avenue and North Maple Road
14. Newport Road and Warrington Drive
15. Pontiac Trail and Skydale Drive
16. Nixon Road and Haverhill Court
17. Devonshire and Belmont
18. E. University and Tappan
19. Galake and Central Avenue
20. Detroit Street and N. Fifth Avenue
21. Lambeth Drive and Ascot Road
22. Earhart Road and Geddes Road

Emergency Alert System (EAS)

NOAA All Hazards Radio – These small and relatively inexpensive radio receivers monitor the National Oceanic and Atmospheric Administration’s (NOAA) network of transmitters, 24-hours a day. After a short setup process, these radios will immediately alert you about potentially life-threatening events.

Washtenaw County is covered by two of NOAA’s transmitters:

- If you are located generally along and north of I-94 and east of US-23, you should program your NOAA radio for 162.550 MHz. If the signal quality is poor, try the alternate frequency of 162.450 MHz.
- If you are located generally along and south of I-94 and west of US-23, you should program your NOAA radio for 162.450 MHz. If the signal quality is poor, try the alternate frequency 162.550 MHz.
- Regardless of the transmitter you select, the Specific Area Messaging Encoding (SAME) number for Washtenaw County is 026161.

Local EAS & LAS Broadcasters – WEMU 89.1 FM; WWWW 102.9 FM; WQKL 107.1 FM; WAAM 1600 AM; and the Local Alert System – Comcast channels 2 – 76.

“Quick Call” VHF Warning Channel – Citizens with police scanning receivers, Washtenaw County’s VHF warning channel is established on 158.760 MHz. All 9-1-1 Centers, hospitals, government buildings, local radio stations, and many schools and businesses monitor this channel 24 hours a day for emergency bulletins from the Washtenaw County Emergency Operations Center and the Ann Arbor Dispatch Center.

Updated

June 9, 2011

Source

Federal Emergency Management Agency

Michigan State Police - Emergency Management & Homeland Security Division

National Weather Service Weather Forecast Office

More Information

<http://www.fema.gov/>

<http://www.ready.gov/>

http://www.michigan.gov/msp/0,1607,7-123-1593_3507---,00.html

<http://www.crh.noaa.gov/dtx/>

<http://www.spc.noaa.gov/faq/tornado/ef-scale.html>

Prevention / Mitigation / Preparedness – Tornado / Severe Thunderstorm

Purchase a NOAA Weather Radio(s)

Work with the University of Michigan Office of Emergency Preparedness (734) 647-1143 and request guidance as needed.

During prime tornado months (late March through August), regularly monitor local weather via the radio, internet, or television.

Advise faculty and staff in buildings and students in the residence halls of the City of Ann Arbor warning siren system and when activated what they should do.

Advise students, faculty and staff to register for the university emergency text messaging service, which will provide notification on impending or current situations.

Designate shelter-in-place areas and train building occupants of their locations.

Hold a shelter-in-place drill at least once per year.

Educate students, faculty and staff on sheltering-in-place in a tornado situation.

Develop provisions for persons who may be outside your building when a tornado warning is issued and the efforts needed to get those persons into a safe shelter.

Review the protective actions section of this EOP regarding persons with disabilities, identify staff that will assist, and discuss efforts needed to get those persons into a safe shelter.

Secure outside items, such as:

- Trash receptacles
- Chairs and tables
- Construction or building material
- Anything else that can become a projectile in high winds

Sensitive electronic equipment should be placed on an approved surge protector. Consult with Plant Operations for questions regarding the protection of electrical equipment or emergency power supplies for critical systems.

Response - Tornado / Severe Thunderstorm

The follow actions should be taken upon the issuance of a “Tornado Warning” for Washtenaw County by the National Weather Service, activation of the City of Ann Arbor’s Outdoor Warning Sirens, or U-M Emergency Alert Advising to shelter-in-place.

Use extreme caution during and after a tornado to avoid any unnecessary accidents.

Remain calm and listen to authorities (DPS, City of Ann Arbor Fire, Police, National Weather Service, etc.) if a tornado warning arises.

Persons outside should immediately return to a building and shelter in predetermined safe areas.

When a “Take Shelter” message is issued via the University of Michigan Emergency Alert Message System, all business or academic activities should cease and all individuals should seek shelter in a designated shelter location or an area as outlined below.

Safe Shelter Areas should/could be:

- Internal hallways on the lowest floors
- Internal classrooms or offices without glass walls/panels/windows
- A basement if quickly accessible and internally safe
- An internal stairwell if glass is not present

Do not use the following areas as Safe Shelter:

- Rooms with high profile ceilings and long truss spans, such as gymnasiums, auditoriums, and cafeterias
- Rooms with an outside wall and/or windows
- Adjacent to entrance/exit doors with glass inserts
- Adjacent to or having atriums, skylights, glass walls

The BIRT will work to ensure all persons in the building are in a safe location. This should include a quick sweep of each room on each floor.

Keep everyone assembled in an orderly manner. Remain in shelter area until the warning expires or emergency personnel have issued an "all clear" signal.

Close windows and blinds/drapes.

Stay away from glass windows.

Secure loose materials in interior shelter areas that could become a projectile in the event of an impact. (i.e., books, equipment, etc.).

Stay inside the building as loose flying objects, downed wires, falling branches/trees, etc. may pose life-threatening situations.

Continue to monitor National Weather Service weather advisories via radio/television for emergency information even after the “all clear” has been issued.

Once the “all clear” is issued, a quick assessment should be done to safely identify persons in need of medical assistance, downed electrical lines, fires, and other hazards that may exist.

Contact 911 to request appropriate assistance.

Render first aid to those who need assistance.

The facility manager or their backup should cautiously exit the building (if safe to do so) in order to meet emergency first responders outside where an incident command post will be established.

Recovery - Tornado / Severe Thunderstorm

If the building has sustained even slight damage contact Plant Operations (734) 647-2059 immediately for assistance.

Be careful of downed power lines, gas line breaks, broken glass, and other sharp objects (i.e., protruding nails, jagged metal edges, etc.).

Do not touch any downed wires or objects in contact with downed lines, due to electrical hazards.

Notify the DPS and Plant Operations of any interruption in utilities (i.e., gas leaks, loss of electrical power).

If gas is detected, notify the Incident Commander and Plant Operations (734) 647-2059 immediately. Ventilate the building if able to do so safely by opening doors and windows. Do not light any matches, lighters, etc., or turn on any device that may cause ignition (i.e. light switch).

If a building sustained damage from the storm, do not enter the building until granted permission by DPS.

Temporarily secure damaged buildings to prevent further weather damage, theft, and other outside factors.

Debrief with all parties involved in the response and recovery efforts to discuss strengths and weaknesses and what could have been done better.

Use extreme caution when entering any structure that has been damaged and utilize Plant Operations in determining whether a structure is safe to enter.

Ensure no one is smoking in case of leaking gas pipes or fuel tanks nearby.

Keep everyone out of damaged parts of the university; chunks of debris or even whole sections of a building may collapse.

Contact the University Risk Management department (734) 764-2200 so claims management and other insurance matters can be handled.