



Spotter Quick Reference Guide

NOAA's National Weather Service (NWS)

www.weather.gov/mkx



Your reports are critical to helping the NWS achieve its mission of saving lives and property through the issuance of timely warnings. NWS needs these reports: tornadoes, funnel clouds, wall clouds, hail ¼ inch in diameter and larger, tstm & non-tstm wind gusts (estimated or measured) of 50 mph or higher, flash flooding (or water over the curb), and extent of damage (property, trees, power-lines, etc). It takes years to be a good spotter. Study and train and attend free NWS spotter classes. Spotting will be very difficult at times, especially at night. When spotting, try to have a partner (two heads are better than one). Below is a set of charts designed to aid you in judging the severity of a weather condition.

Damaging Winds:

Straight-line Wind Gust Estimates

45-57 mph (39-49 kts)	Non severe. Large trees bend; twigs, small limbs break, and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roof, doors). A few loose shingles removed from houses.
58-74 mph (50-64 kts)	Severe. Large limbs break; shallow rooted trees pushed over. Semi-trucks overturned. More significant damage to old / weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas; mobile homes, carports incur minor structural damage; large billboard signs may be toppled.
75-89 mph (65-77 kts)	Hurricane force. Widespread tree damage (trees either broken or uprooted). Mobile homes may incur more significant structural damage; be pushed off foundations or overturned. Roofs may be partially peeled off industrial/commercial/warehouse buildings. Some minor roof damage to homes. Weak or open structures (e.g. farm buildings, airplane hangars) may be severely damaged.
90+ mph (78+ kts)	Significant severe. Groves of trees flattened. Mobile homes severely damaged; moderate roof damage to homes. Roofs partially peeled off homes and buildings. Barns and sheds completely demolished.

Tornado:

Enhanced Fujita Scale (EF-Scale)

EF0: 65 - 85 mph - Light damage – Loss of roofing material, large tree branches broken, some large trees uprooted
EF1: 86 - 110 mph - Moderate damage – considerable loss of roof material, mobile home flipped to side or over, bent light poles
EF2: 111 - 135 mph - Considerable damage – large roof sections removed, most wall still standing, light pole collapses
EF3: 136 - 165 mph - Svr damage – exterior walls & some interior walls of homes removed, complete destruction of mobile
EF4: 166 - 200 mph - Devastating damage – all home walls collapsed, partial destruction of masonry motels and strip malls
EF5: > 200 mph - Incredible damage – destruction of home (or shopping mall), home slab swept clean, steel buildings deformed

Note: You need not give an EF-scale estimate with a tornado report. Tornado intensity is largely determined after NWS damage assessments.

Large Hail:

Hail Sizes	
0.25" - .375" - Pea	0.50" - Small Marble
0.75" - Penny	0.88" - Nickel
1" - Quarter	1.25" - Half Dollar
1.5" - Ping Pong Ball	1.75" - Golfball
2" - Lime	2.5" - Tennis Ball
2.75" - Baseball	3" - Large Apple
4" - Softball	4.5" - Grapefruit
4.75 - 5" - CD/DVD	

Watch/Warning Definitions

A **Severe Thunderstorm Watch** means conditions are favorable for thunderstorms to producing large hail 1 inch in diameter or larger, and/or damaging winds in excess of 58 mph for the next several hours. An isolated tornado cannot be ruled out. A **Severe Thunderstorm Warning** means radar has detected, or a report has indicated, a severe thunderstorm producing large hail or damaging winds is in progress or is imminent.

A **Tornado Watch** means conditions are favorable for tornadoes. A **Tornado Warning** means radar has indicated a possible tornado (mesocyclone) or a report has indicated a tornado as being in progress.

Personal Notes

Note: NEVER report "large marble-sized" hail. Small marble is assumed to be ½"

Hail Ruler:

0"	0.5"	1"	1.5"	2"	2.5"	3"	3.5"	4"	4.5"	5"	5.5"	6"	6.5"	7"

Tips for providing useful reports

- Good spotters practice safety first (safety #1 priority, report is #2 priority). Never put yourself or others in harm's way.
- Be sure you know what you're reporting...false reports do more harm than no report at all. Not sure? – Don't report.
- Some tools to help you provide accurate reports include:
 - A NOAA Weather Radio All Hazards
 - Any weather measuring instrument
 - A pad and a pencil or pen
 - A correctly set watch
 - This guide sheet
 - A ruler – lower left
- An accurate report should include the following:
 - A detailed explanation of the particular hazard, including any damage, injuries and fatalities.
 - Exact time of event occurrence and time of call.
 - Location of Event – distance and direction from a village or city within a tenth of a mile (within the same county as the event). If you are stationary, know your location ahead of time!
 - Any additional significant information.
 - Your name and e-mail address so we can contact you with possible questions (optional).
- An example of an accurate report to a 911 center:

"My name is Joe Smith and I am a trained weather spotter. I observed straight-line wind gusts estimated around 75 mph at 5:58 pm about 1.2 miles south-southeast of Beaver Dam in Dodge County. A tree fell onto a house injuring 2 people in Beaver Dam at 5:58 pm."
- Ways to relay your report to the National Weather Service include:
 - Twitter
 - Call 911
 - Facebook
 - NWS toll free number
 - Amateur Radio
- **Severe Weather Myths**
 - The safest place to escape to while traveling as a tornado threatens is under an overpass.
 - Tornadoes avoid bodies of water such as lakes and rivers as well as mountains, large hills, swamps, and marshes.
 - Large cities are protected from tornadoes because of their high-rise buildings.
 - If a thunderstorm is not overhead, you can not be struck by lightning.
 - It is safe to take a truck or SUV into flood waters because of their weight.
 - Open windows & doors to equalize air pressure so building doesn't explode.
 - The southwest side of the basement is the safest place & I'm 100% safe in any basement (are you safe if a car or other large object is deposited into a basement by a tornado?)