A photograph of a cornfield under a dark, stormy sky. The foreground is filled with rows of green corn plants. In the distance, a line of trees and a few buildings are visible. The sky is dark and overcast, with a bright light source breaking through the clouds, creating a vertical beam of light. The overall mood is dramatic and ominous.

National Weather Service Weather Watcher Quick Start Guide

Purpose

This Quick-Start Guide is intended to be a quick reference for designated “weather watchers” who support public safety at outdoor events. This quick-start guide is part of a suite of resources that support effective use of a “weather watcher”. The full suite of resources includes:

- This Quick-Start Guide
- Full Length Weather Watcher Guide
- Outdoor Event Weather Watcher video tutorial: <https://youtu.be/ZmH6vnup92o>
- Weather Watcher Checklist (see Appendix C)
- Weather Watcher Briefing Page
- Additional training and a tabletop exercise may be available from your local NWS

What is a Weather Watcher?

A weather watcher is a trained individual that understands how to use basic weather information and monitors the weather forecast and current conditions. The purpose of the weather watcher is to maintain situational awareness of the weather and activate the event’s weather safety plan if needed. By monitoring weather conditions, the designated weather watcher allows everyone else to focus on the business at hand.

Because of the time and logistics required to shelter people who are unfamiliar with the event’s plan, ***the designated weather watcher is particularly critical to special events.***

Who can be a Weather Watcher?

Anyone can be a weather watcher! It is recommended that this person attend training and know what is included in this guide. The weather watcher should have the tools to monitor the weather. Ideally they should also have authority to activate an event’s safety plan. When this is not feasible, it is critical that the decision-maker and designated weather watcher communicate extremely well so that dangerous delays in response do not occur.

It is also important that the role of the designated weather watcher is always filled. In other words, the responsibility is best tasked to a position rather than an individual who might or might not be there when the hazard strikes. It doesn’t matter as much *who* it is, as long as everyone knows they carry the responsibility for monitoring conditions and alerting those who will “make the call”.

The remainder of this guide will:

- provide background on the functions of the weather watcher
- outline a weather evaluation and monitoring process
- describe key forecast and monitoring tools

Weather Watcher Process

Weather monitoring should begin at least three days before the event begins.

An effective weather watcher should:

- Understand event-specific weather-related thresholds and evacuation/sheltering time
- Have reliable internet access
- Have access to up-to-date radar information
- Maintain continuous weather watch on event day (It is encouraged that they ***not*** be designated for any other responsibilities.)
- Communicate directly with incident command staff, especially when a threshold is expected to be met
- Have access to NWSChat (Request an account several weeks ahead of time: <https://nwschat.weather.gov/create.php>)
- Complete the Weather Watcher Checklist

Weather Watcher Checklist

The Weather Watcher Checklist will guide the Weather Watcher through the key forecast and monitoring information available to assess weather hazards. It is divided into three sections:

The ***Days Leading Up to Event*** section should be followed each day leading up to the event. This allows the weather watcher to develop a general understanding of potential weather hazards.

The ***Day of Event*** section should be utilized early on the day of the event to assess in detail the potential for weather hazards.

The ***During Event*** section lists information that should be monitored throughout the day of the event assess how hazards are evolving. This will aid in determining when hazards will impact the event.

In addition, The Weather Watcher Checklist is designed to be used in conjunction with the Outdoor Event Weather Watcher Briefing Page associated with your local NWS office. The briefing page includes tabs that correspond to each section of the checklist and contain the appropriate NWS information to evaluate during that time frame. Links to local weather watcher pages can be found at: www.weather.gov/Lincoln/weatherwatcher

Be sure to periodically refresh the Briefing Page to ensure the latest information is displayed.

Weather Watcher Checklist

Days Leading Up To Event:

- Hazardous Weather Outlook
- EHWO
- Weather Story Graphic
- Situation Report (if available)
- SPC Outlooks
- Detailed Forecast and Hourly Weather Graph (enter location)

Day of Event: **Storm Speed:** _____ **Storm Direction:** _____

- Hazardous Weather Outlook including forecast storm motion
- EHWO
- Weather Story Graphic
- Situation Report (if available)
- SPC Day 1 Outlook
- Detailed Forecast and Hourly Weather Graph (enter location)
- Area Forecast Discussion
- Was an NWS conference call scheduled or briefing slides sent?

During Event **Storm Speed:** _____ **Storm Direction:** _____

- Radar (various sources)
- Graphical NOWcasts
- Watches and Warnings (enter location)
- Detailed Forecast and Hourly Weather Graph (enter location)
- NWSChat (<https://nwschat.weather.gov/live/>)

NWS Information

Hazardous Weather Outlook (Text): The HWO outlines weather hazards expected over the next seven days, with a focus on today and tonight. May be expanded to include additional information about what, when and where if thunderstorms are expected. Issued by 5 AM, 12 PM, and 5 PM with additional updates as needed. Expected storm motion is also included in the first 24-hours.

Enhanced Hazardous Weather Outlook (Graphical): The EHWO provides a map based depiction of expected hazardous weather over the next seven days. The table below the map defines each of the color coded risk categories. Please note that the definition will change for each weather element. Updated by 5 am, 5 pm and as needed.

Weather Story: The Weather Story is an image depicting upcoming weather. The graphic and the accompanying text below it will provide you with information on the most significant weather over the next few days. Additional graphics may be linked below the Weather Story if they are available. These may include additional hazard, preparedness or safety information.

Situation Report: The Situation Report will be available leading up to critical weather events such as when much of the local area is within an SPC Enhanced or Moderate Risk for severe thunderstorms. It will contain what, when and where information as well as a discussion of forecaster confidence.

SPC Severe Weather Outlooks: Indicate the chance of severe weather occurring within 25 miles of a point. Generally, the lower categories represent areas with the greatest uncertainty and smallest expected coverage of storm reports. Conversely, the higher categories represent the greatest perceived hazard, confidence, and coverage. Clicking each image will take you to a larger version. Reference Appendix A for a more detailed description of the SPC categories.

Detailed Forecast: Also known as the Point and Click Forecast. Enter the City and State or zip code to access the forecast for the 1.5 mi by 1.5 mi square area centered on that point. The detailed forecast page will open in a new browser tab. Temperatures, dewpoint and sky cover are shown out to 7 days. Wind speed and direction are shown through the next 3 days.

Hourly Weather Graph: An hourly view of all forecast elements. Click a location on the map to access the graph for that location. All elements except the amount of precipitation are available in hourly format out through 7 days. In general, the best way to interpret the graph is to look at the trends over time versus relying on an individual value for each hour. The same information can also be viewed in a table format via the "Tabular Forecast" link on the bottom right hand table.

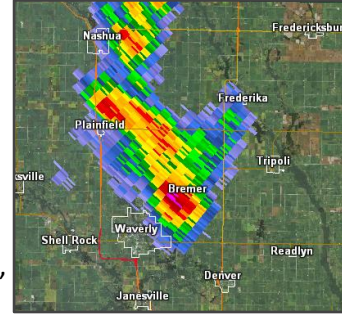
Area Forecast Discussion (AFD): A scientific, technical discussion providing the reasons behind forecast decisions. The discussions may also include forecaster confidence and may touch on alternative scenarios if forecast confidence is lower than desired.

Graphical Nowcasts: In cases of active weather, your local weather service office may issue a graphical short term forecast called a "Graphical Nowcast" or "Graphicast". Typically this image will depict what is expected in the next few hours. When a Graphicast is in effect, a special image will appear in the lower left of your local office's web page, and the graphic will display on the first tab of the weather watcher briefing page.

Radar: One of the best tools for observing weather for the next few hours is radar. There are many different sources for radar data, including www.weather.gov. There are also third party vendors that offer free or pay-for-service access to radar data. We recommend having two independent sources in case one of the sites is down.

When using radar, there are few important things to remember:

1. **Be sure the radar data is current. Always check the timestamp on the image.**
2. Know where you are located on the radar.
3. Some radar programs predict hail size, rotation in thunderstorms and potential tornadoes. Don't rely on this data as it is highly prone to error.
4. Some apps have the ability to depict storm motion and speed, if they don't you'll have to figure this out on your own. You will find a way to do this on the next page.
5. Radar data does not always translate to what is actually happening at the surface. The farther you are from the radar, the greater this difference can be.



Watches and Warnings

Watches and warnings can be monitored on numerous web pages and through many sources. It is recommended to have a source that auto-updates and/or alerts when critical information is posted. Some options include: NWSChat, text messaging services, and radar apps. The Bot function in NWSChat is a good way to monitor the feed of Watches and Warnings.

Watch: A watch means that conditions are becoming favorable for severe weather. This serves as your heads up to be prepared for severe weather occurring. If a watch is issued, you should:

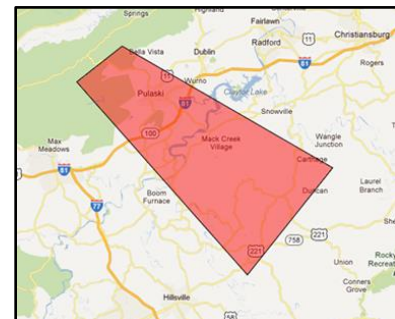
- Begin monitoring radar and Graphical Nowcasts if not already doing so.
- Check storm speed to determine the range of storms when sheltering would be needed.
- Check your event's severe weather plan for potential actions, such as notifying staff, unlocking buildings, updating public information, posting on social media, etc.

Warning: *Important note: Warnings issued which include the event location likely do not provide enough lead time to be used as a trigger for executing evacuation/shelter plans.*

Warnings issued upstream of the area can be useful in helping gauge the movement of storms and help determine when your event may be impacted.

Warnings indicate that life-threatening weather is imminent. It is recommended to view the warning both in text and graphic formats. The graphic (pictured on the right) shows at a glance the area included in the warning.

The text details the magnitude and timing of the hazards.



Determining Storm Speed

Knowing the expected storm speed is critical to effective implementation of your plan. For example, if you know it takes 30 minutes to alert and clear your venue, and storms are moving

at 60 miles an hour, you will need to activate your plan when storms are 30 miles away from the edge of your 8 mile safety radius. If the storms are moving at 30 miles an hour, you will need to activate your plan when storms are 15 miles away from the the 8 mile safety radius.

Time-to-Distance Calculation Tool

The Weather Watcher Briefing page includes a link to a calculation tool to help determine the approximate range of storms when your plan should be enacted. Form inputs include location of your event, time needed to enact your plan, and expected storm speed. Form output (distance in miles) is received via email.

Options for Determining Storm Speed

Warning text: Each severe weather warning and statement includes the storm's speed and direction of movement. For a starting point, check warnings that are nearby or upstream.

Estimate from radar: Note the begin and end time of a radar loop, then note where the storms were at the beginning and where they were at the end. Using this estimate for distance travelled, estimate where it will be in that same amount of time in the future. For example, if the loop is 60 minutes long and the storm travels 30 miles in that time, you would estimate that the storms would advance another 30 miles in the next hour.

Timing tools: Some radar apps for phone or computer include a timing tool to estimate time of arrival based on the current storm movement.

NWSChat

NWSChat is a direct link for core partners to communicate with their local NWS office in a local office chat room. The chat room is a venue for reporting non-life threatening conditions and to ask questions regarding the forecast. It also provides an automated feed of NWS products. The advantage of chat is that it allows people on both sides to ask questions without interrupting the other side. The disadvantage is that there may be a delays in responses, so urgent questions or information are best handled via phone call. Registration and approval are required to access NWSChat so please request an account several weeks prior to the event.

- NWSChat Bot NWS Product Feed – **NO ACCOUNT NEEDED:** <http://weather.im/iembot>
- Request NWSChat access: <https://nwschat.weather.gov/create.php>
- NWSChat Live: <https://nwschat.weather.gov/live> (mobile friendly)
- NWSChat Live Demo: https://nwschat.weather.gov/NWSChat_Live_Demo.mp4

Supplemental Resources

Video Briefing

When certain hazardous weather criteria are met, your local office may create a recorded video briefing on the expected weather. These are short in nature and meant to provide basic

information about hazardous weather. Video briefings are typically posted at the top of your local office's homepage.

Social Media

Local NWS forecast offices are active on Facebook and Twitter. Local NWS office social media feeds are a good way to **supplement** the Weather Watcher Page. If you are running an event social media feed, it can be a good resource for information about developing hazards to share quickly with your own followers. Warning information is available via twitter but this should not be the sole feed used for warning information. It is best for the Weather Watcher to monitor NWS local office social media feeds in conjunction with the Weather Watcher website.

Call your local office

If all else fails, you can call your local office. On the bottom of your local office's home page, you will find a public phone number. If you are associated with an emergency management agency, you should already have a preferred contact number.

Other NWS Resources Available in Partnership with Local Emergency Management

Conference call

In certain circumstances, your local office may host a conference call for Emergency Managers and other core partners. These calls usually focus on the specifics of the event and provide partners an opportunity to ask questions. Contact your local emergency manager for more information about what was included a call.

Decision Support from the NWS

Core partners (usually the local emergency manager) can submit requests for the NWS to provide "heads up" phone calls and briefings for events. When your emergency manager has requested this support, the weather watcher will usually be communicating directly with the local NWS as the weather evolves. Work through your local emergency manager to ensure your event has been submitted to the NWS.

Appendix A: Weather Considerations for Outdoor Events

Designate shelter areas if available

No one is safe outside of a solid enclosed structure during any thunderstorm; tents and pavilions are ***not*** suitable shelters

Establish weather thresholds to prompt activation of sheltering / evacuation plan

Examples/suggestions:

- Thunderstorms (lightning) within 8 mile radius
- Calculate sheltering/evacuation time utilizing 3 step decision guide
- Heat index of 95 degrees
- Non-thunderstorm wind gusts exceeding 45 mph

Designate a Weather Watcher

An effective weather watcher should:

- Understand event-specific weather thresholds and evacuation/sheltering time
- Have reliable internet access
- Have access to up-to-date radar information
- Complete the Weather Watcher Training Module and Checklist
- Maintain continuous weather watch on event day (It is encouraged that they not be designated for any other responsibilities.)
- Communicate directly with incident command staff, especially when a threshold is expected to be met
- Have access to NWSChat (Request an account several weeks ahead of time) <https://nwschat.weather.gov/create.php>
- Be aware of the basic suite of weather information available

Relay weather information ahead of potential hazardous weather

Examples/suggestions:

- General severe weather risk
- Severe Thunderstorm Watches or Tornado Watches
- Prior to possible evacuation, reminding what the evacuation plan is and where storm shelters are.

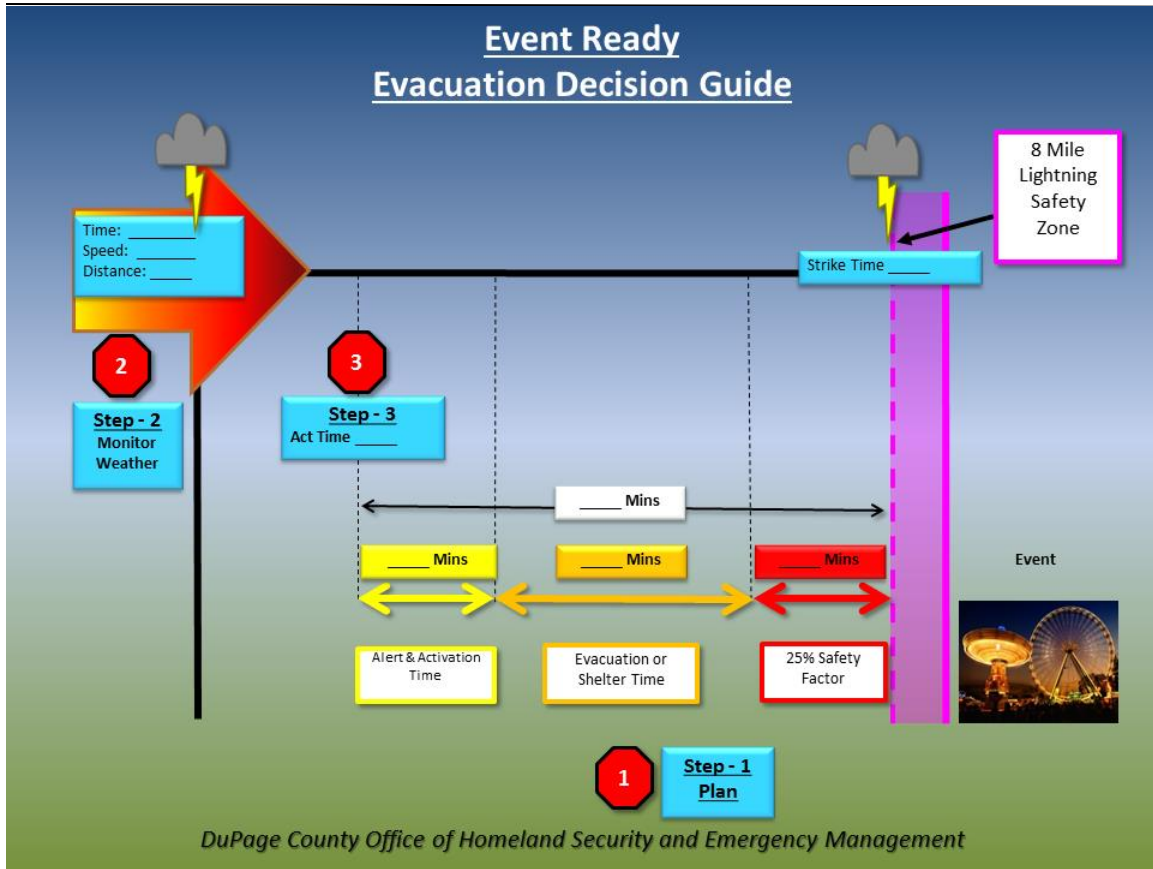
Appendix B: Time to Shelter

How much time do you need to shelter?

Alert and Activation Time (min)	Evacuation or Shelter Time (min)	25% Safety Factor	Total Time Needed (Minutes)
$(\quad + \quad) \times 1.25 = \quad$			

It is suggested that the total time to evacuate and/or shelter be calculated before the event begins. There are three key components to the total time:

1. Alert and Activation Time - the time needed to mobilize staff and facility to conduct evacuation/sheltering and the time needed to make notify patrons.
2. Evacuation/Shelter Time - The time needed for movement of patrons once the evacuation/sheltering begins.
3. 25% Safety Factor - Combine the Alert and Activation Time with the Evacuation/Shelter Time and multiply by 1.25. This allows for unexpected delays in the movement of patrons, changes in storm arrival time and other unforeseen circumstances.



This guide can be used by the weather watcher to track the predetermined time for evacuation/shelter and the current position and speed of approaching storms to determine when the plan needs to be enacted. A video tutorial on this chart can be found on the Planning and Resources Tab of the weather watcher website.

Appendix C: Weather Watcher Checklist

Days Leading Up To Event:

- Hazardous Weather Outlook
- EHWO
- Weather Story Graphic
- Situation Report (if available)
- SPC Outlooks
- Detailed Forecast and Hourly Weather Graph (enter location)

Day of Event: Storm Speed: _____ Storm Direction: _____

- Hazardous Weather Outlook including forecast storm motion
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During Event: Storm Speed: _____ Storm Direction: _____

- Radar (various sources)
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- NWSChat (<https://nwschat.weather.gov/live/>)

Weather Watcher Notes

Timing:

Hazards:

Impacts: