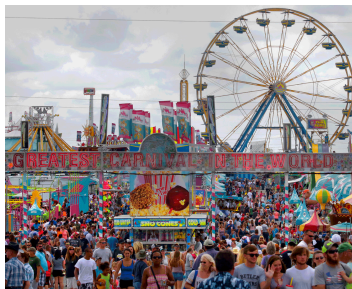




# National Weather Service Event Ready Guide

## Incorporating Weather Information Into Your Safety Planning For Outdoor Events



### Purpose:

Each year, numerous outdoor events occur across all parts of the country. These events typically require a great deal of planning to make sure the event runs smoothly and safely. A weather planning component is critical for the safety of all participants. Core partners of the National Weather Service (NWS) can submit requests to provide impact-based decision support services (IDSS) for these events. If you have a role in the event planning process, please work with the public safety official that is involved with the event (emergency manager, police, fire, etc), to ensure your event has been submitted to the NWS.

Once this weather support has been requested, the local public safety official may designate someone (referred to as a “Weather Liaison” from here on) to serve as the primary communication conduit to the NWS. Regardless of an active Weather Liaison, there should be an individual onsite that understands basic weather information and is in routine contact with the NWS for the weather forecast and current conditions.

This planning guide is intended for NWS core partners as well as those individuals that may fulfill the role as a Weather Liaison. This guide will provide an overview of the NWS IDSS available to assist in the development of safety plans for outdoor events. Throughout the planning process we encourage direct communication with your local NWS office. An overview of the primary NWS products are provided in separate appendices. Lastly, we highly encourage you to reach out to your local NWS office for additional training and assistance with tabletop exercises.



## Why have a Weather Liaison?

Have you ever been responsible for the safety of an outdoor event? If so, you have probably had concerns about the weather. If your local resources allow, think about incorporating a Weather Liaison. The Weather Liaison is the person who is designated to be the primary weather contact at your event. They will maintain contact with your local NWS office, maintain situational awareness of the weather both before and during your event, and can activate your event action plan.



A thorough evaluation of weather hazards and continuous monitoring of evolving hazards can lead to more confident and effective decisions regarding the safety of event-goers. This guide will outline the functions of the Weather Liaison, provide an overview of tools to help monitor the forecast, and establish a line of communication between the Weather Liaison and your local NWS Office.

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# Planning for Your Event

All event plans should address four primary questions:

1. Which weather hazards could impact your event?
2. What are the sheltering and evacuation options at your event?
3. How will you alert people?
4. How long will it take to notify people and then evacuate or seek shelter?

## Which weather hazards could impact your event?

Potential weather hazards for outdoor events include lightning, flooding, high wind, thunderstorms, and tornadoes. Depending on the time of year and nature of your event, fog, heat, or wintry weather may also be a concern. Therefore, when planning for your event, take some time to evaluate and discuss the potential hazards you may face during the event. It would also be a good idea to consider what magnitude of hazard would cause you to take action.

For most warm season outdoor events, lightning will trigger your safety plan. Lightning is a threat to anyone outside of a solid, fully enclosed structure, and can strike several miles away from a thunderstorm.

## What types of sheltering options are available at your event?

FEMA asks in their [Special Events Contingency Planning Job Aids Manual](#), “Are shelter facilities available at:

- Transport pick-up and drop-off areas?
- Spectator and official viewing areas?
- Seated eating areas?
- Pedestrian thoroughfares?
- First aid and medical centers?
- Competitors’ and officials’ marshaling areas?”

FEMA suggests surveying the event location for any inherent hazards; i.e. Does the site have utility lines that could be brought down by high winds and pose a hazard to attendees?



Beyond the event’s venue, it is also beneficial to assess the crowd factors of your event, such as event length and attendee age demographics. Here is a list of questions that could be beneficial while planning for your outdoor event.

- What is the daily estimated attendance?
- Could the crowd demographics influence evacuation timing and sheltering ability?
- Are there adequate ingress and egress options, or is it limited?



- Look at foot traffic and vehicle traffic. Where or can a helicopter land?
- How weather resilient are the event facilities; tents, booths, buildings, etc?
  - What is the wind threshold of your tents?
- Multi-day event? Will attendees be staying overnight, camping or other lodging?

Shelter locations and timing go hand-in-hand. It is critical to determine (1) how long it takes to alert everyone and (2) how long it takes for everyone to move to shelter or evacuate. The logistics of - and time required to - evacuate or move people to the shelter areas must be considered. For example, congestion at stairwells and doorways may slow the sheltering process. Mobility-impaired people may require special assistance and more time.

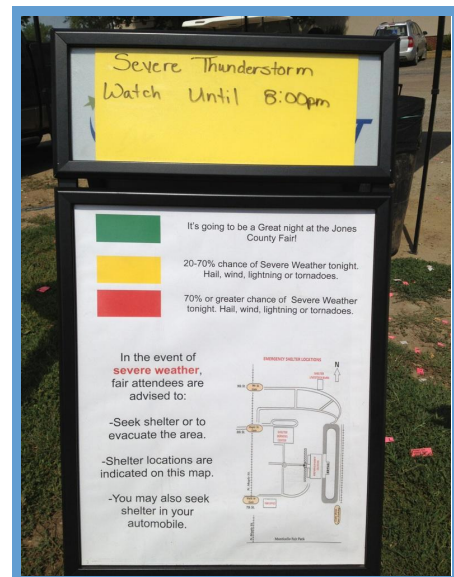
To determine shelter locations within a building, we recommend that shelter areas be identified with the help of an engineer or architect familiar with each building's design. In general, for severe weather, you should look for indoor rooms without windows on the lowest floor.

## How will you alert people?

### The Power of Pre-notification

Pre-notification allows people to prepare themselves for something unusual that may occur. For example, when event staff know that storms are expected, they may re-familiarize themselves with shelter areas and stay alert for PA announcements. Experience has shown that when the public is given a hint that weather might affect their plans, they respond more quickly when severe weather strikes.

Pre-notification can be accomplished through any number of simple means and can also remind people of what they would be expected to do if the hazard occurs. Practical examples include: email to staff, phone call/text message, sign on the bulletin board at a trailhead, tent-sign at a ticket booth, Twitter feed, etc.



### Communication During the Event

Communication is key in any emergency situation. Poor communication will slow or even prevent response. To complicate matters further, human nature pushes people to confirm a hazard before they act. Thus, it is always recommended to establish redundant communication with a consistent message. When redundancy isn't possible, then a backup plan should be in place in case the primary method fails.

Some common alert methods include: PA systems, two-way radios, social media feeds such as Twitter, TV monitors, large scoreboards, sirens, and mass notification



tools (CodeRed). **Determining the most effective and practical communication method for your event is critical.**

### Determining Evacuation and Sheltering Timing

The time it will take to evacuate or shelter patrons at your event should be calculated well in advance. There are three key components to the total time, The Alert and Activation Time, Evacuation/Shelter Time, and a 25% Safety Factor.

**Important: The timing formula below is just an example and may not apply to every scenario. The main takeaway is to try to determine, to the best of your ability, the time needed to get people to safety when hazardous weather approaches.**

Alert and Activation Time (minutes)	Evacuation or Shelter time (minutes)	25% Safety Factor	Total Time Needed (minutes)
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$$(\text{_____} + \text{_____}) \times 1.25 = \text{_____}$$

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





# Defining a Weather Liaison

The purpose of the Weather Liaison is to maintain situational awareness, be a conduit for information to and from the local NWS, and activate the event's safety plan if needed. Because of the time and logistics required to shelter people who are unfamiliar with an event's plan, *the designated Weather Liaison is particularly critical to special events.*

## Who can be a Weather Liaison?

The Weather Liaison should be designated by the event safety official, which is often a public safety official such as an emergency manager or police/fire chief. The Weather Liaison should have and understand how to utilize resources to monitor the weather. Again it should be stressed that you may not always have the resources for a designated full time weather liaison, however there should be someone onsite that can fulfill these duties at a minimum.

The public safety official for the event can submit requests for the NWS to provide "heads up" phone calls and briefings for the event. When the public safety official has requested this support, the Weather Liaison will usually be communicating directly with the local NWS as the weather evolves. Work through this public safety official to ensure your event has been submitted to the NWS.

### Request NWS Weather Support for Events

[www.weather.gov/xxx/eventsupport](http://www.weather.gov/xxx/eventsupport)

"xxx" is the three letter identifier for your local office.

Three letter identifier index:

[https://www.spc.noaa.gov/misc/NWS\\_WFO\\_ID.txt](https://www.spc.noaa.gov/misc/NWS_WFO_ID.txt)

Ideally, the Weather Liaison should have authority to activate an event's safety plan. When this is not feasible, it is critical that the decision-maker and designated Weather Liaison communicate seamlessly so that dangerous delays in response do not occur.

It is important that a Weather Liaison is always identified and tasked to a position rather than a sole individual. This ensures there will always be someone present when a hazard occurs. It does not matter who it is, as long as everyone knows who has the responsibility for maintaining weather awareness.



### Weather Liaison Process and Resources

Weather monitoring should begin at least three days before the event begins. An effective Weather Liaison should:

- Understand event-specific weather thresholds and evacuation/sheltering times.
- Have reliable and redundant communication methods, including internet, phone or 2-way radio access. This is especially important for remote areas where cellular service may be lacking. Have access to up-to-date radar information.
- Complete the Weather Liaison Checklist.
- Make a conscious effort to maintain situational awareness of the weather.
- Communicate directly with NWS personnel and incident command staff, especially when a threshold is expected to be met.

### Weather Evaluation Basics

For your weather evaluation to be effective, you must answer two simple yet critical questions.

#### 1. What weather will pose a hazard to my event?

During the planning phase, it is time to start identifying what types of weather will have an impact on your event.

#### 2. What weather is expected during my event?

As you gather information from your local NWS office, you will build a picture and begin to understand what weather is expected and if it will have an impact on your event.

### Weather Liaison Checklist

The Weather Liaison Checklist (Appendix A) will guide the Weather Liaison through the key forecast and monitoring information available to assess weather hazards.

There are two main sections of the Weather Liaison Checklist

#### 1. Before the Event:

- Days leading up to the event:** Generally 3-4 days out, but may extend to 7 days out. This section will help the Weather Liaison develop a general understanding of potential weather hazards to the event.
  - Morning of the event:** This section of the checklist should be utilized early in the day and will help the Weather Liaison assess, in detail, the potential for weather hazards.
- During the event:** This section will provide all the information and sources that should be monitored by the Weather Liaison during the event.



### Before the Event: Assessing the Weather Risk

The weather forecast will play a larger role in your safety planning as the event nears. Point specific forecasts from the NWS go out seven days into the future. Generally speaking, uncertainty is higher farther out in time. If it looks like your event might be near a critical threshold, please contact your local weather service office to speak with a forecaster about confidence, timing, trends, etc.

There are several sources of weather information available. We'll briefly explain them here, but a more detailed explanation along with examples is shown in Appendix A.

- The NWS will most likely contact the public safety official or Weather Liaison once the event support form is completed. Direct communication with the NWS is important because it ensures there is correct contact information, as well as reviewing any weather concerns/thresholds. An initial briefing may also be provided.
- A 7-day summary forecast is available by entering your location on [the Forecast Points web page](#).
- Any potential hazardous weather within this time frame is highlighted in the Hazardous Weather Outlook, which is a short, plain-language text product.
- There is also a color-coded tabular version, called the Graphical Hazardous Weather Outlook.
- Each office uses a Graphical Weather Story to communicate weather information as well.
- Forecast details are explained in the Areas Forecast Discussion. This is a free form narrative that discusses the meteorological reasoning behind the forecast.

In summary, there are many resources available through the NWS to assist the Weather Liaison in preparing for an event. We encourage you to incorporate these resources and include your local NWS office in training exercises.





### During the Event: Following Your Action Plan

You have been monitoring forecasts and preparing for several days and it is the day of your event. As you move from preparing and planning to taking on the task of watching the weather in the role of Weather Liaison, there are a host of resources, many you have already been using, that will assist you in maintaining weather awareness. It should also be stressed that you are not alone in this task. The NWS is available 24/7 and is always there for your assistance.

Recommended Tools during the event:

- Hourly forecast data for your event location (provided by your local office).
- Methods, preferably more than one to maintain contact with your local NWS.
- Communication method with key event decision makers.
- Way to activate the weather safety plan for your event.

Optional Tools during the event:

- Access and monitoring NWS Chat.
- Tools to monitor weather radar, lightning and watch/warning alerts.
- Social Media, both monitoring and possibly to alert attendees.

This section describes the information that should be monitored immediately before and during your event. Again, it should be stressed that you are not alone in this task. The NWS is available 24/7 and is always there for your assistance.

### Methods to Communicate with your Local NWS Office

#### The Phone

The NWS is always proactively monitoring and supporting your requested event. Depending on the event support agreed upon by you and your local NWS office, a meteorologist may contact you via email, call, and/or text with weather support briefings and updates as any inclement weather approaches. However, you can and should call the NWS office anytime you have concerns or questions. When you need assistance immediately, the phone is your best avenue to reach a meteorologist who can help. If you are an emergency manager or associated with an emergency management agency, you should have a preferred contact number.

#### 2-Way Radio

If you have the equipment resource, radio communication provides a near real time exchange of information.

#### NWSChat

NWSChat is a direct link for core partners to communicate with their local NWS office. 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 delays in responses, so urgent questions or information are best handled via phone call. NWSChat is restricted to those directly tied to public safety. Registration and approval are required to access NWSChat so please request an account several weeks prior to the event.

### Webinars / Conference Calls

Depending on when certain hazardous weather is forecasted, your local NWS forecast office may schedule webinars or conference calls for emergency managers and other core partners. Many times, these webinars/calls will be hosted in the morning or early afternoon, prior to when storms or other impactful weather is expected to occur. This is your opportunity to hear directly from the forecasters on duty. These webinars/calls will likely contain valuable information related to storm expectation, timing, intensity, and forecaster confidence. This is also a great opportunity to ask questions.

## Additional Information you can use to aid in decision making:

### Interactive National Weather Service Mobile Alerting (iNWS)

While the NWS will notify you of watches and warnings for your event, it is a good practice to have multiple reception methods. The iNWS tool allows you to receive customized text and email alerts for an area you select. This is a free service and open to those in public safety.

Here is the link: <https://inws.ncep.noaa.gov/>

### Decision Support Packet/Emailed Briefing

During times when significant weather is forecast, your local office may create a packet of pertinent information. This packet will likely be emailed to you the morning of or you can find it linked on your local office's home page. These packets will provide information such as storm timing, confidence, and hazards expected.

### 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 information collected via direct or indirect contact with your local office. If you are running an event social media feed, it can also 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 Liaison to monitor local office social media feeds in conjunction with the Weather Liaison website.



### Understanding Storm Speed and Motion

Storm speed is an indicator of potential hazards and directly affects how you should respond to a storm. As a Weather Liaison, it is critical to know how fast storms are approaching your location. Determination of storm speed and motion is an advanced skill that NWS meteorologists are specially trained to assess. Storm speed and direction can change over a short period of time and can be difficult to predict. It is vital that the Weather Liaison establish contact with the NWS to obtain the approximate time storms are expected to arrive and impact their event. Additionally, the Weather Liaison should be alert for changes and critical updates from the NWS.

To effectively implement your shelter or evacuation plan, it's critical to obtain the storm arrival time from the NWS. For example, if you know it takes 30 minutes to alert and clear your venue, and the NWS Meteorologist you speak with informs you that storms will arrive in approximately 45 minutes, you will need to activate your plan, at a minimum, within the next 15 minutes.

### Importance of Storm Speed: Different Storm Types

#### Slow Moving, Isolated Thunderstorms

These thunderstorms are often referred to as “air-mass thunderstorms” or “pop up thunderstorms” and are more common during the mid to late summer season and year round along the coasts. These storms move very slowly or can remain stationary. Lightning and heavy rainfall are the primary hazards associated with these storms. However, sometimes they can produce brief gusty winds. Typically, they only last 30 to 45 minutes.

#### Line of Thunderstorms

A line of thunderstorms moving toward your location will likely be moving very quickly. This would result in an elevated risk of damage and injury due to their fast nature. Strong, damaging winds are possible long before any thunder is heard. Thunderstorm outflow winds can also arrive before any rain occurs. This can be deceiving if merely looking at radar imagery. NWS Meteorologists are trained to recognize damaging winds associated with linear thunderstorms. Be prepared to collaborate with the NWS long before storms arrive.

#### Supercell Thunderstorms

These types of thunderstorms are usually associated with the most destructive hazards; hail, wind, and tornadoes. Supercellular thunderstorms occur isolated or in clusters, usually along a dedicated surface front or boundary. These storms are usually moving at a moderate to fast speed and can result in a swath of damaging winds and damaging hail. In the right atmospheric conditions, a supercell will produce a tornado. The most destructive tornadoes are typically associated with a supercellular thunderstorm. If supercell thunderstorms are forecast, you will need to maintain constant awareness and contact with your local NWS office. For additional information, please view the following Appendices:



## National Weather Service Event Ready Guide

- [Appendix A - National Weather Service Forecast Products and Examples](#)
- [Appendix B - Forecasts Specifically Related to Thunderstorms, Flash Flooding, and Excessive Heat](#)
- [Appendix C - Basics of Weather Radar](#)
- [Appendix D - Evacuation and Sheltering Decision Tool](#)