

October 2013

G0272

Warning Coordination

Student Manual



FEMA

Federal Emergency Management Agency
Emergency Management Institute



U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Weather Service

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Warning Coordination

Student Manual

FEDERAL EMERGENCY MANAGEMENT AGENCY
EMERGENCY MANAGEMENT INSTITUTE

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Acknowledgements

The preparation of this course was made possible through the assistance and cooperation of individuals from the National Weather Service (NWS), the Federal Emergency Management Agency (FEMA), and other organizations. The Emergency Management Institute (EMI) wishes to thank the following individuals for their roles in the planning and development of the training materials.

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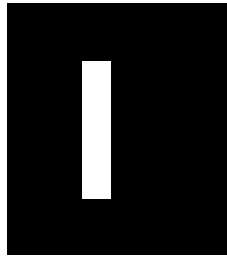
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Introduction and Course Overview

Course Goal

The goal of the Warning Coordination course is to enable you to save lives and protect property through effective warning coordination and communication to the public.

Unit Objectives

Because this unit introduces you to the course and provides an overview of what to expect, there are no learning objectives in Unit 1.

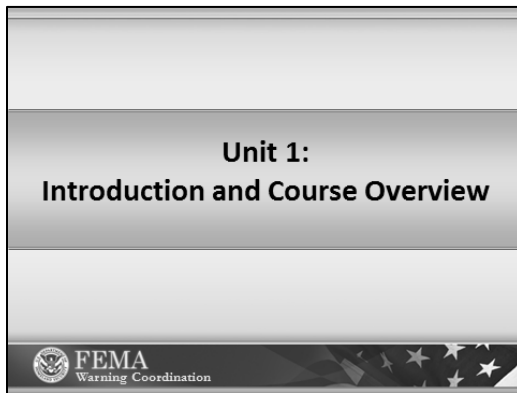


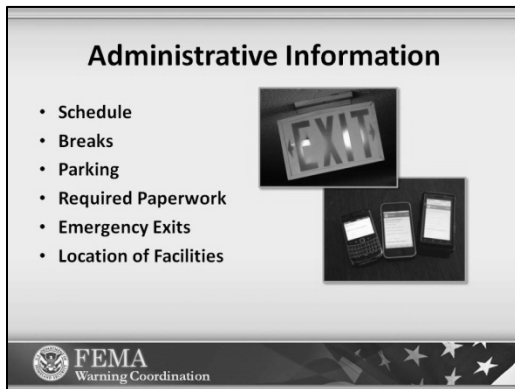
Course Introduction

About the Student Manual

There is added space on the right side of the page for you to take notes. Large bold text on this side of the page indicates the beginning of a new unit. Occasionally, special notes will be inserted on this side of the page.

This unit provides an overview of the course contents and the importance of warning coordination. You will learn how emergency managers work closely with the National Weather Service (NWS), the news media, and private forecasting companies to provide effective warnings that can be received and understood by people at risk.





Administrative Information

- Schedule
- Breaks
- Parking
- Required Paperwork
- Emergency Exits
- Location of Facilities

The slide features a central graphic with an 'EXIT' sign, a smartphone, and a tablet. The FEMA Warning Coordination logo is at the bottom left, and a decorative star pattern is at the bottom right.

The instructor will go over any necessary administrative information at this time.



Introductions

- Name
- Role in Warning Coordination
- Location
- Years of Experience

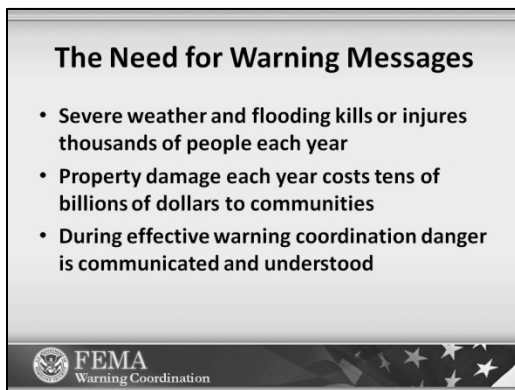
The slide features a central graphic of a person in a suit gesturing with their hand. The FEMA Warning Coordination logo is at the bottom left, and a decorative star pattern is at the bottom right.

As directed by your instructor, introduce yourself to others in your class. Let them know about your experience and role in warning coordination.

Trade contact information so you can build a network of professionals for support after the class is over.



Course Background



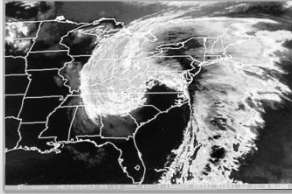
Did you know?*

In 2010, hazardous weather claimed the lives of nearly 500 people in the U.S. and its territories. Heat was the highest danger, with 138 deaths.

Public safety is enhanced through the National Weather Service's (NWS) warning program. This program is dependent on effective warning coordination and communication with State, local, tribal, and territorial officials and the media. It is only through effective warning coordination that the message of danger can be communicated to and understood by those at risk.

*Source: <http://www.nws.noaa.gov/om/hazstats.shtml>

How do we use radar / satellite information?



How do we effectively communicate as emergency managers?

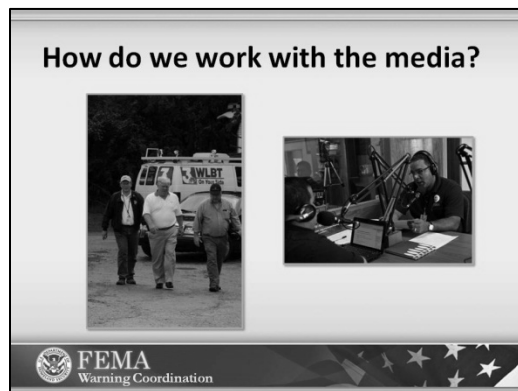


How do we warn for flash floods?



How do we warn for winter storms?

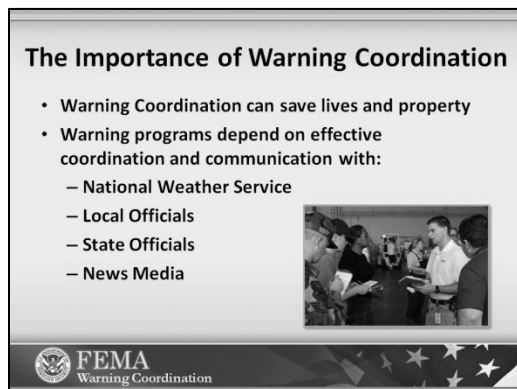




This course will help provide answers to these questions. It will inspect the critical role that emergency managers and other officials play in coordinating and communicating warnings to their citizens.



Course Overview




When weather- or flooding-related events are probable, warning coordination is paramount to saving lives and protecting property.

This course is designed for state and local officials who are responsible for warning coordination and communication.

Course Objectives


- Predict how people in the community may respond to different types of warnings based on certain social factors
- Develop a hazardous weather warning message based on a specific event and the threat it poses to the community
- Explain the interlocking sets of activities that work together to form an effective community warning system



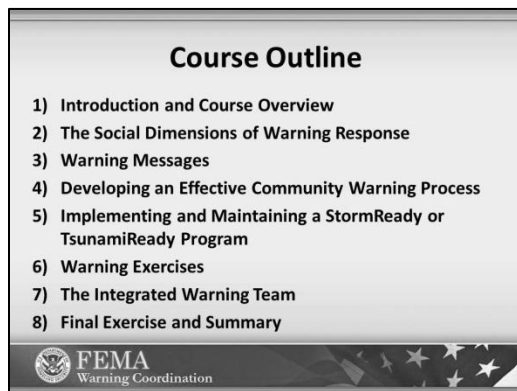
For your warning messages to be effective, it's important for you to be aware of how people in your community may respond to warnings. You will learn about factors that influence how people respond, as well as the components and characteristics that make up effective warning messages.

Course Objectives

- Propose improvements to a community's warning system based on identified breakdowns in coordination and communication
- Develop warning messages for a given scenario that are targeted for delivery by a particular media type
- Develop a warning coordination and communication strategy for a given scenario



This course will challenge you to consider how the warning system in your community can be improved. You will also practice developing warning messages and strategies for effective communication and coordination.

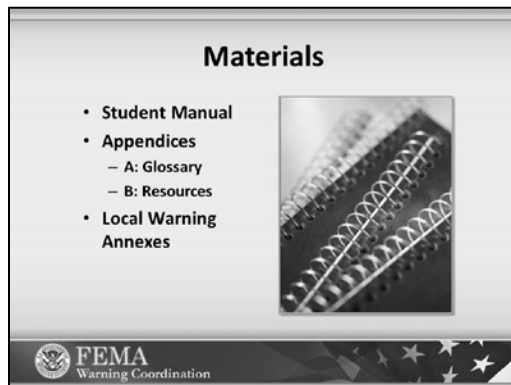


There are eight units in this course. The objectives for each unit are listed on the following page.

Course Objectives

The following are the objectives for the course. They identify the actions you should be able to accomplish upon completion of each unit.

Unit	Objectives
2	<ul style="list-style-type: none"> ■ Identify the primary goal of a warning system. ■ Define basic terms associated with warning systems. ■ Describe the factors that affect public response to warnings. ■ Explain how prior experience, perceived proximity, and observation influence the way people process warnings.
3	<ul style="list-style-type: none"> ■ Describe the components of effective warning messages. ■ Identify the characteristics of effective warning messages.
4	<ul style="list-style-type: none"> ■ Describe the main components of an effective warning system. ■ Define the purpose of the Weather Warning Partnership. ■ Explain the roles and responsibilities of the key players who must respond to a hazardous weather threat. ■ Explain how to coordinate timeframes and decisions among key players. ■ List technologies for receiving and disseminating warning messages.
5	<ul style="list-style-type: none"> ■ Identify potential members of the local damage assessment response team. ■ Describe the benefits of the StormReady and/or TsunamiReady program(s). ■ Describe the criteria required to be StormReady or TsunamiReady. ■ Explain how to implement the StormReady and/or TsunamiReady program(s). ■ Identify methods for maintaining recognition as a StormReady and/or TsunamiReady community.
6	<ul style="list-style-type: none"> ■ Identify where warning coordination breakdowns have occurred in a warning system, based on scenario information. ■ Analyze a community's warning processes to identify potential breakdowns in coordination and communication.
7	<ul style="list-style-type: none"> ■ Identify the local media agencies that are needed to form an effective Weather Warning Partnership. ■ Explain the unique issues involved in disseminating warning messages via television, radio, print-based media, and the internet. ■ List the factors that may hinder development of effective partnerships with members of the media. ■ Describe methods for developing effective partnerships with media members. ■ Develop strategies for focusing warning messages to the intended method of dissemination.
8	<ul style="list-style-type: none"> ■ Identify warning coordination and communication requirements based on a specific event and the threat it poses to the community. ■ Develop a strategy for working with the media to avoid presenting conflicting messages to the community.

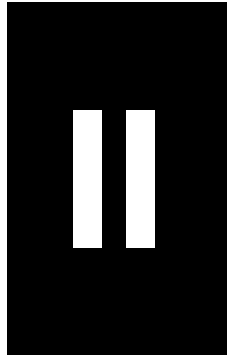


You will need this student manual, including the appendices, and your local warning annex which you were requested to bring.



As directed by your instructor, ask any questions that you may have at this point.

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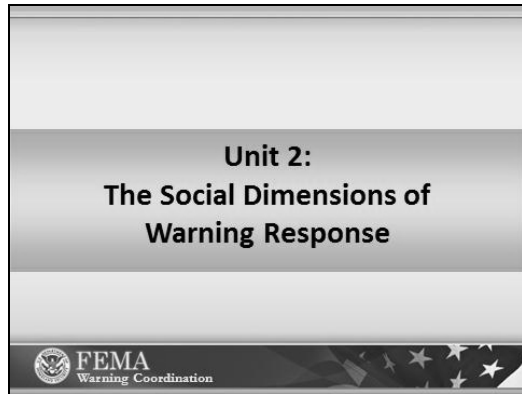
The Social Dimensions of Warning Response

Unit Objectives

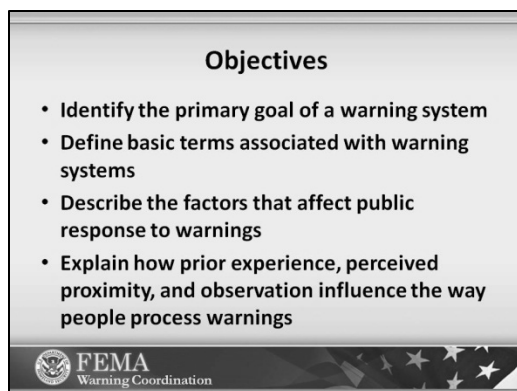
The unit will enable you to predict how people in the community may respond to different types of warnings based on certain social factors.

By the end of this unit, you will be able to:

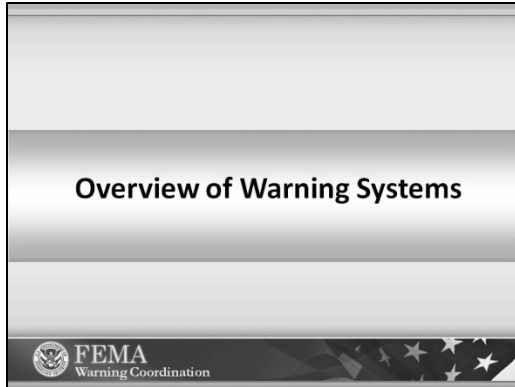
- Identify the primary goal of a warning system.
- Define basic terms associated with warning systems.
- Describe the factors that affect public response to warnings.
- Explain how prior experience, perceived proximity, and observation influence the way people process warnings.



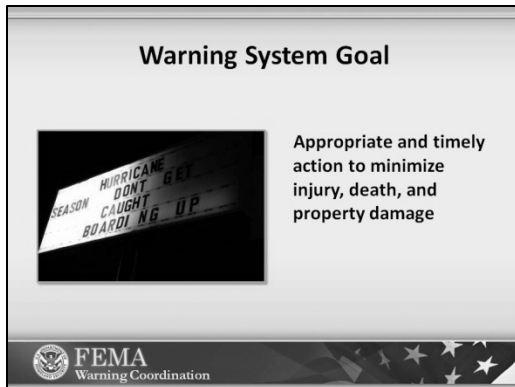
Unit Overview



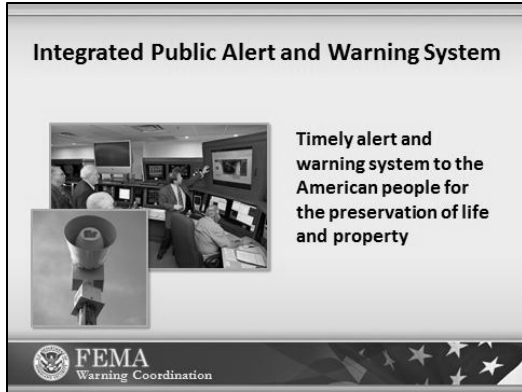
It is important for you to understand what an effective warning system should accomplish, and to be able to use associated terminology correctly. You need to know about some of the misconceptions you will encounter regarding warning messages. This unit will also help you be able to predict how people in the community may respond to different types of warnings based on certain social factors.



Overview of Warning Systems



The goal of an effective warning system is to maximize the number of people who take appropriate and timely action to minimize injury, death, and property damage due to hazardous weather and flooding. Actions must be taken to ensure that people receive consistent warning messages from multiple sources.



*Did you know?**

Warning messages over the radio and TV reach less than 40% of the populace during the work day.

In the middle of the night, that number drops to less than 12% for TV and only 5% for radio.

The Integrated Public Alert and Warning System (IPAWS) is an effort by federal agencies to make alert and warning more effective by enabling rapid dissemination of authenticated alert information over as many communications channels as possible.

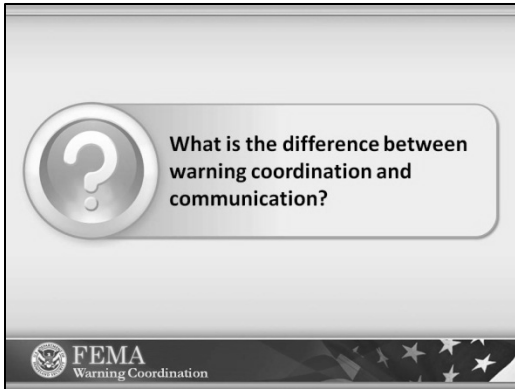


Use the space below to take notes about the two types of warnings.

From Emergency Managers

From the National Weather Service

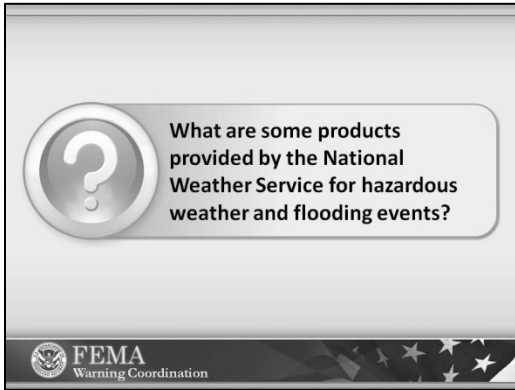
*Source: http://www.fema.gov/emergency/ipaws/ipaws_history.shtm



Warning Coordination

Use the space below to take notes about the difference between these two terms.

Warning Communication



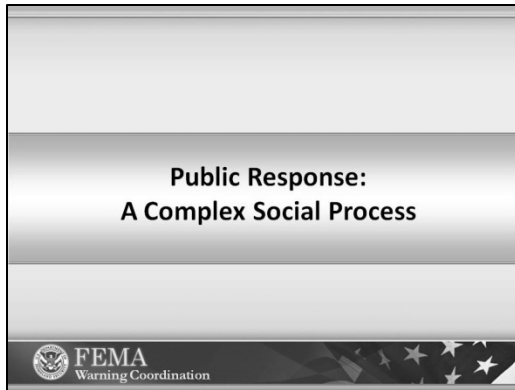
Use the space below to take notes about the different types of NWS products.

NWS Product: _____

NWS Product: _____

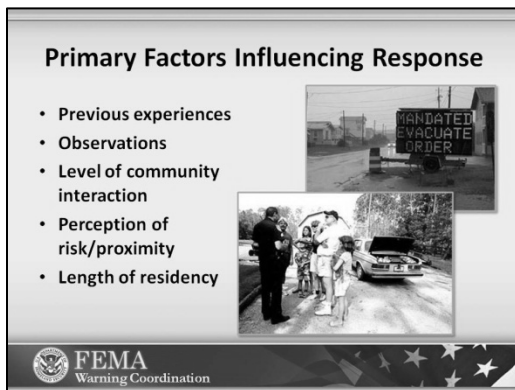
NWS Product: _____

NWS Product: _____




Public Response: A Complex Social Process

The public's response to disaster warnings is a complex social process. When different people listen to the same message, there may be considerable variation in what they hear, believe, remember, and do.





Multiple factors influence the public's response to a warning. People tend to rely on their previous experiences with the type of hazard and what they can readily observe or confirm with others, before making response decisions. Many people make judgment calls based on how likely they perceive the hazard to impact them. People who are not familiar with local hazards may react differently from those who have lived in the community a long while.

Primary Factors Influencing Response:
Family Composition



- Family network
- Children
- Pets




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Did you know?


Per the Pets Evacuation and Transportation Standards Act of 2006 (PETS Act), state and local emergency preparedness operational plans are required to address the needs of individuals with household pets and service animals.

Family composition is a major factor influencing response to a warning. Generally, people with relatives nearby and/or children in the home will respond more quickly. Pet owners may endanger themselves by refusing to evacuate to shelters, where pets are usually not allowed.




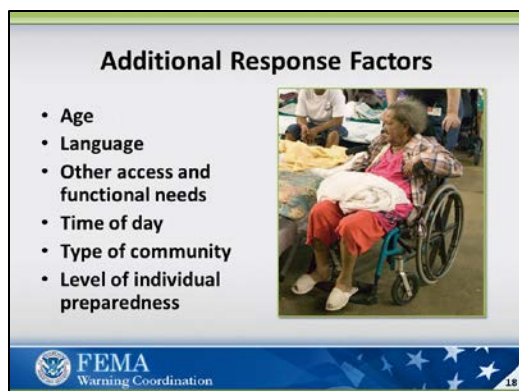
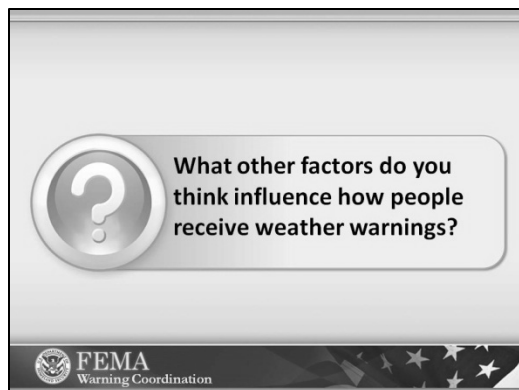
How could you expect your community to respond?

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Given your community's hazards and history, how do you think your residents process warnings?

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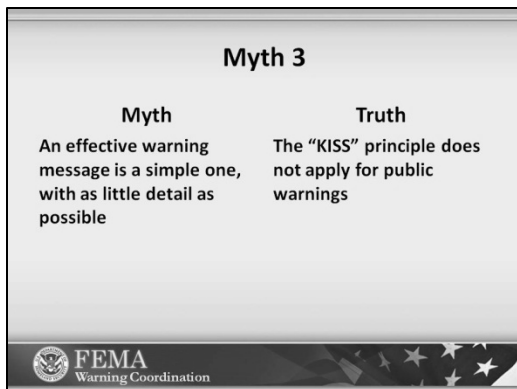
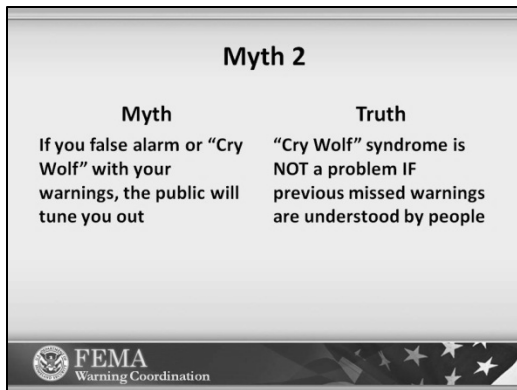


The very young and older adults may not receive or fully understand weather warnings and may also need assistance. Populations who don't speak English or individuals who are blind, deaf, or hard of hearing may not receive some types of warnings.

Warning messages may not be received at certain times of day or by people in certain locations, such as rural communities.

People who have taken the time to prepare for hazards are more likely to heed warnings and act appropriately.

Warning Myths




Myth 4

Myth	Truth
People remember what the sounding of various siren signals mean	The best use of outdoor warning sirens is to alert people to immediately seek additional information about an imminent threat



Unit Summary

- **Terms to know:**
 - NWS products
 - Emergency management terms
- **Factors influencing response to warning messages**



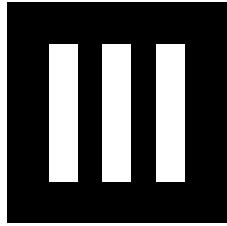
Unit Summary

Something to think about...

What did you learn in this unit that can help you improve warning coordination in your community?

In this unit, you became familiar with the NWS warning products and some basic terms related to warning messages. Remember, in order to produce effective warning messages, it is important to understand how people in your community evaluate and respond to warnings.

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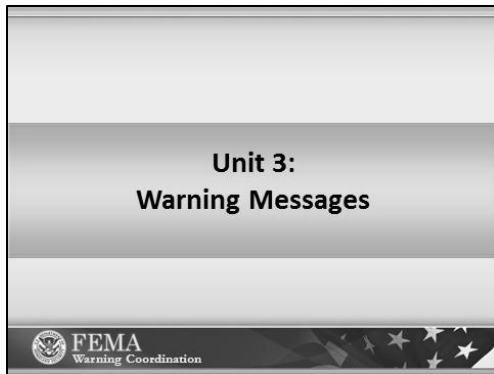
Warning Messages

Unit Objectives

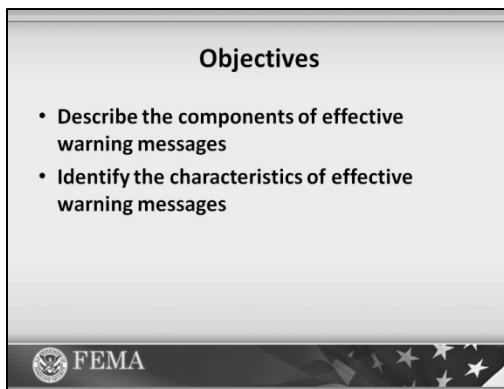
This unit will describe the components and characteristics of an effective warning message.

By the end of this unit, you will be able to:

- Describe the components of effective warning messages.
- Identify the characteristics of effective warning messages.



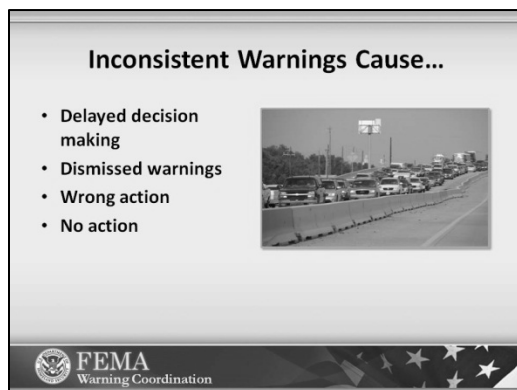
Unit Overview



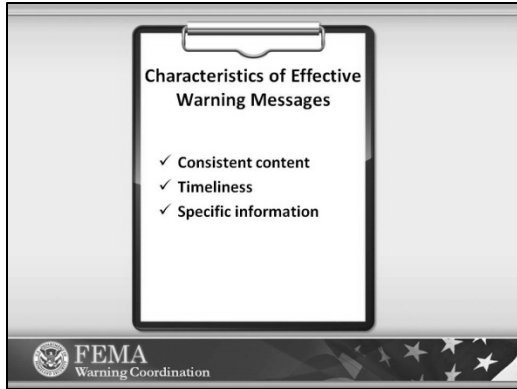
In this unit, you will learn about the components and characteristics of an effective warning message. The unit will enable you to develop a hazardous weather warning message based on a specific event and the threat it poses to the community.



Effective Warning Messages

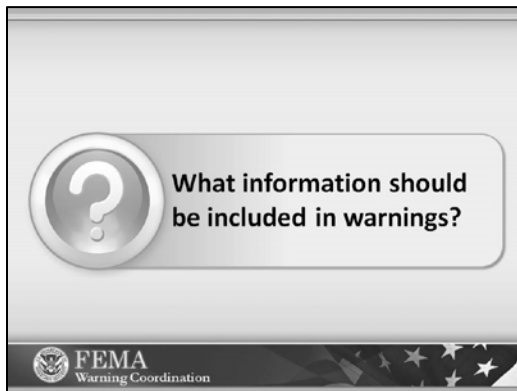


When inconsistent warning information is delivered, the population's health and safety may be jeopardized because many people may delay decision-making, not believe the warnings, take the wrong action, or not act at all.



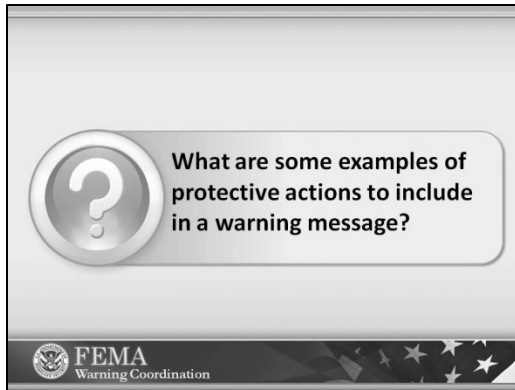
To prevent these problems, warning messages have the following characteristics:

- Consistent content
- Timeliness
- Specific information



Use the space below to take notes about the components of effective warning messages:

-
-
-
-
-
-
-

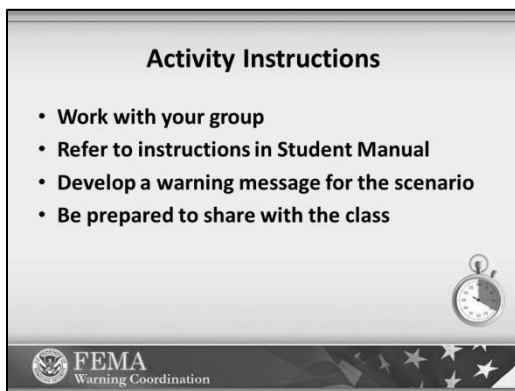


Use the space below to write some examples of protective actions that might be included in a warning message, depending on the hazard:

-
-
-
-
-
-



Small Group Activity: Develop a Warning Message



As directed by your instructor, complete the activity on the following pages.

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Develop a Warning Message



You will have 20 minutes to complete this activity.

Purpose: This activity is intended to provide you with an opportunity to develop a warning message in response to a common scenario.

Instructions: Follow the steps below to complete this activity:

1. Read the scenario below.
2. Work in your group to develop a warning message that includes all of the components that are necessary to make the message effective. Be sure that your message contains specific local information.
3. When your group is finished, select a spokesperson to present the warning message to the class.

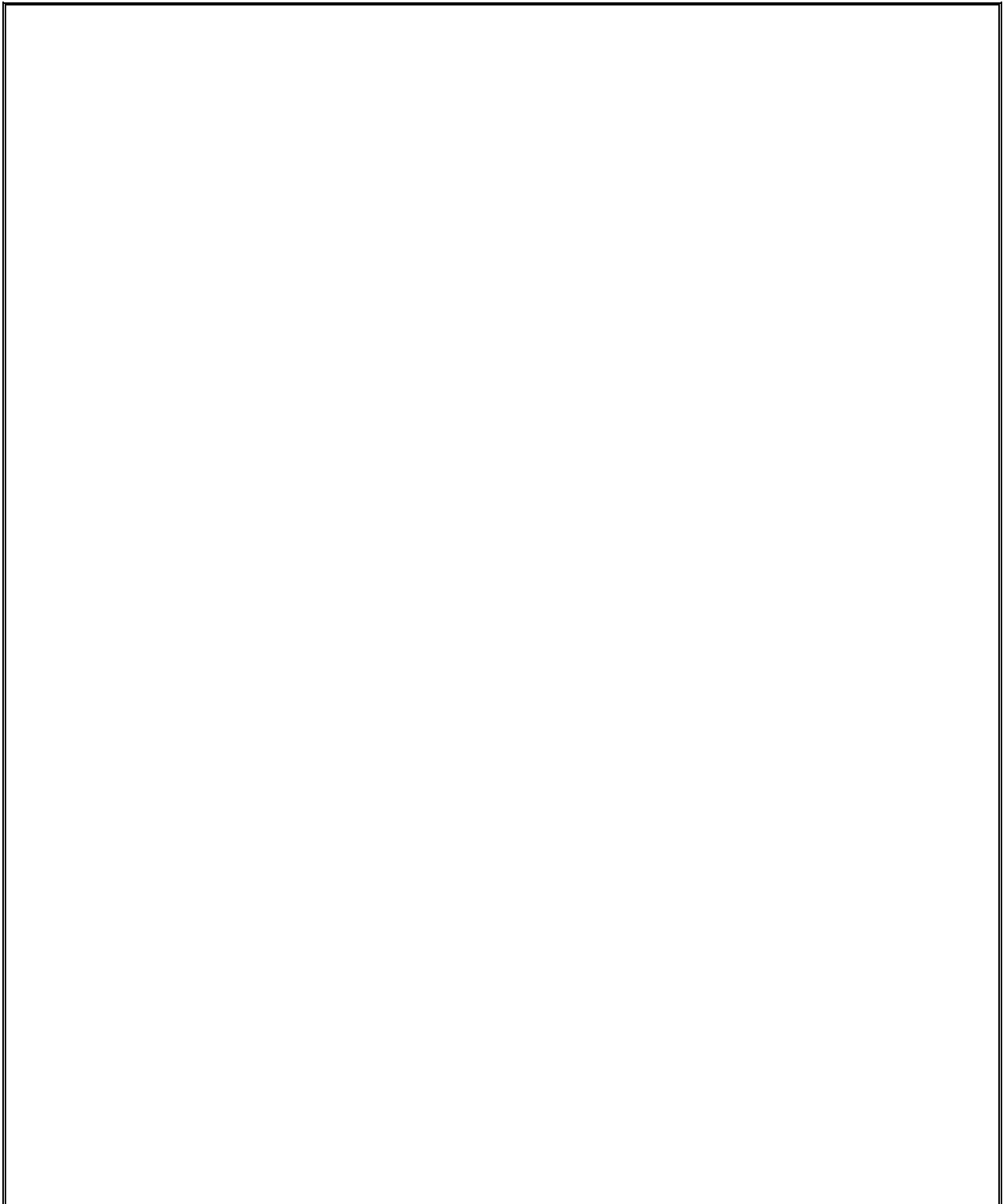
Scenario

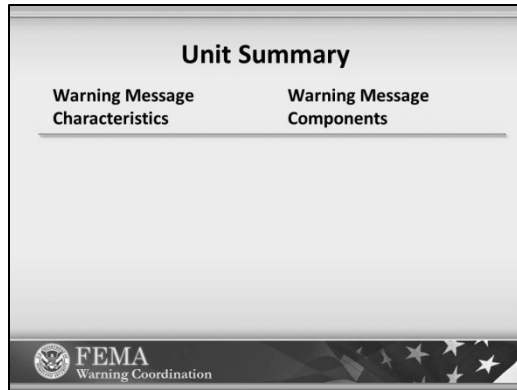
It has been an unusually wet spring in the mid-Atlantic region. The soil is saturated and it has been raining off and on for more than one week.

Hurricane Chris made landfall this morning as a Category 2 hurricane, crossing Louisiana and Mississippi on its route north. Chris has been downgraded to a tropical storm. Current forecasts predict that the storm will move into the mid-Atlantic area within the next 24 hours. It is expected to stall over the region, producing heavy rain – perhaps for several days.

Use the space provided on the next page to write a warning message for your area.

Warning Message: Tropical Storm Chris





Unit Summary

Something to think about...

What did you learn in this unit that can help you improve warning coordination in your community?

In this unit, you learned about the importance of effective warning messages. You also learned that effective warning messages should have consistent content, be timely, and contain specific information such as hazards, location, magnitude, likelihood, timeframe, source of warning, and protective actions.

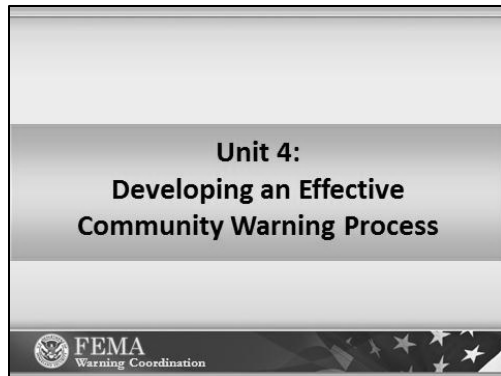
IV Developing an Effective Community Warning Process

Unit Objectives

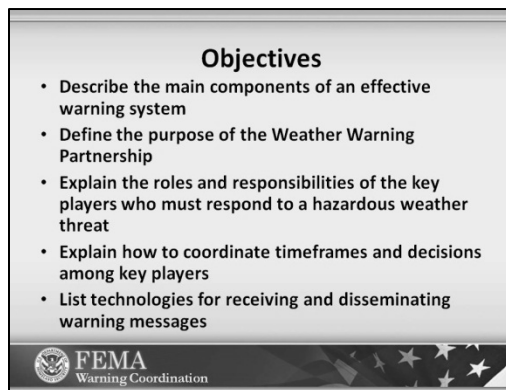
This unit focuses on the components of a warning system or process. The unit will enable you to explain the interlocking sets of activities that work together to form an effective community warning system.

By the end of this unit, you will be able to:

- Describe the main components of an effective warning system.
- Define the purpose of the Integrated Warning Team.
- Explain the roles and responsibilities of the key players who must respond to hazardous weather and flood threats.
- Explain how to coordinate timeframes and decisions among key players.
- List technologies for receiving and disseminating warning messages.



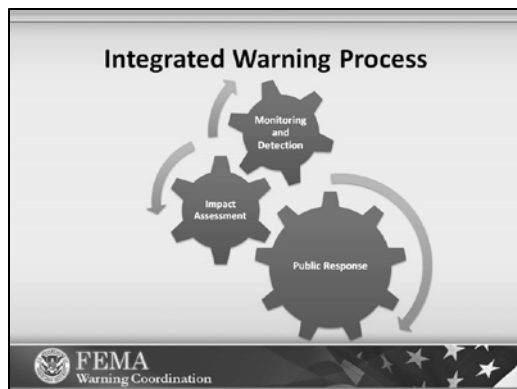
Unit Overview



This unit focuses on the components of a warning system or process. The unit will help you understand the interlocking sets of activities that work together to form an effective community warning system.

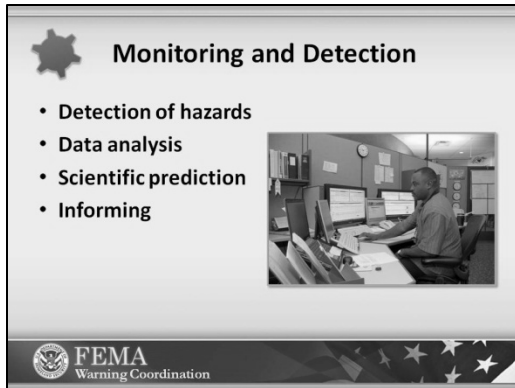


Overview of the Integrated Warning Process



The warning process is composed of a series of interlocking sets of activities that work together for an effective community warning system. These three activities, or components, are:

- Monitoring and detection
- Impact assessment
- Public response.



Monitoring and Detection

- Detection of hazards
- Data analysis
- Scientific prediction
- Informing

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The monitoring and detection component consists of four steps:

- Detection of hazards
- Data analysis
- Scientific prediction
- Informing



How might local agencies monitor the weather?

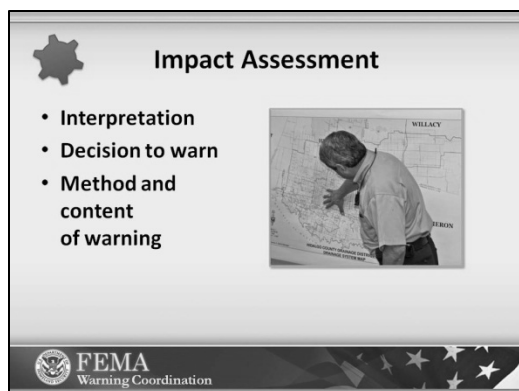
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**Want to know more?**

More information on weather spotters and their role is available through a SKYWARN® Spotter Training course on the University Corporation for Atmospheric Research's (UCAR's) MetEd website.

Information on how emergency managers can make use of weather spotter groups is provided in the G365 course, *Partnerships for Creating and Maintaining Spotter Groups*.

Links are included in the Resources appendix.



The assessment component of the warning process involves the analysis of the prediction in light of the need to warn those at risk. It includes the following:

- Interpretation

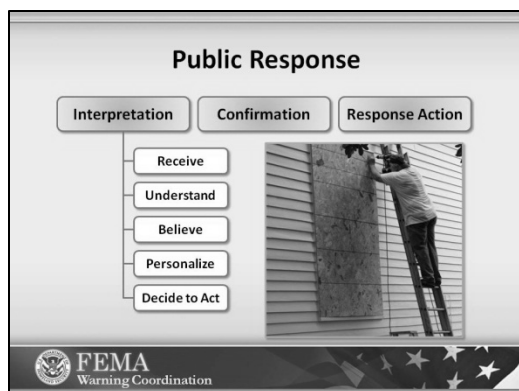
- Decision to warn

- Method and content of warning



Something to think about...

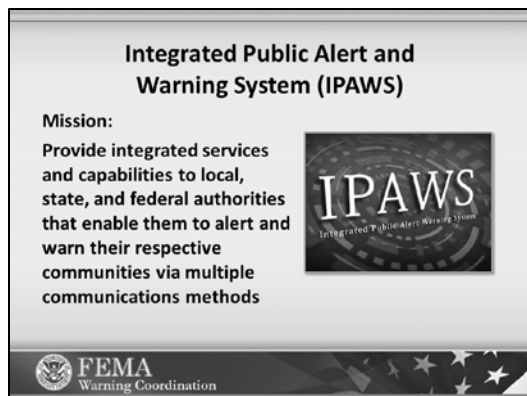
What warning technologies is your community currently NOT using that you should consider using?



The public response component of the warning process is composed of interpretation, confirmation, and response action.

When interpreting a warning message, people go through a series of steps:

- **Receive** the warning message.
- **Understand** what is being communicated.
- **Believe** that the message is true.
- **Personalize** the message (i.e., “I am at risk.”)
- **Decide to act** to get out of harm’s way or reduce the risk.

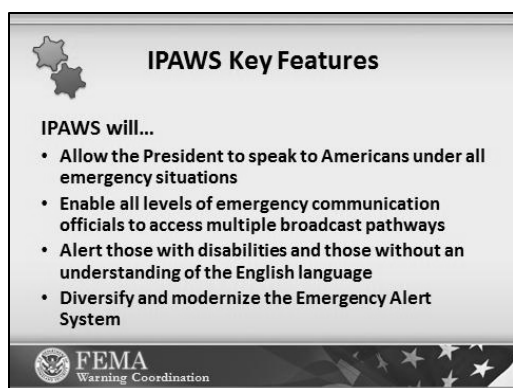


Want to know more?

The IPAWS video can be found at:

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

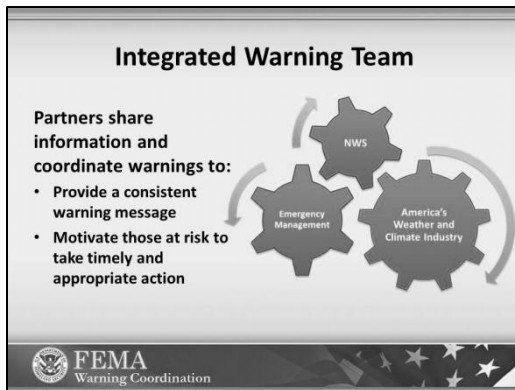
As you learned in Unit 2, the Department of Homeland Security is developing a new alert and warning system to enable the American people to receive alert and warning information through as many means as possible. This new system is being designed to meet the goals of improving security, reliability, language penetration, accessibility, interoperability, coverage, and resiliency of the public alert and warning system.



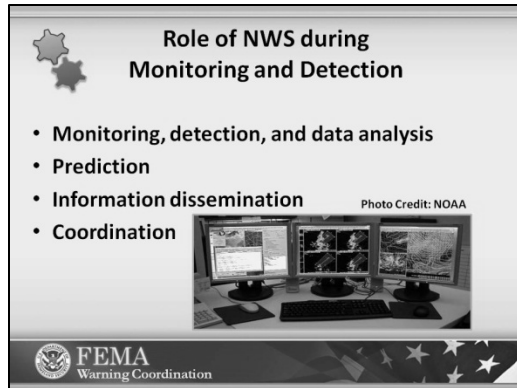
IPAWS will allow the President of the United States to speak to the American people under all emergency circumstances. It will also enable federal, state, territorial, tribal, and local emergency communication officials to access multiple broadcast pathways to create and activate alert and warning messages. IPAWS will reach all Americans, including those with disabilities or who do not have an understanding of the English language, at all times, over more communications channels, in all locations, throughout the United States.



Roles and Responsibilities of the Integrated Warning Team




The key players in the warning process are the NWS, emergency managers, and America's Weather and Climate Industry. Together, they form an **Integrated Warning Team** with the goal of motivating those at risk to take timely and appropriate action. To accomplish this, the key players have specific roles and responsibilities within each component of the weather warning process.



Role of NWS during Monitoring and Detection

- Monitoring, detection, and data analysis
- Prediction
- Information dissemination
- Coordination

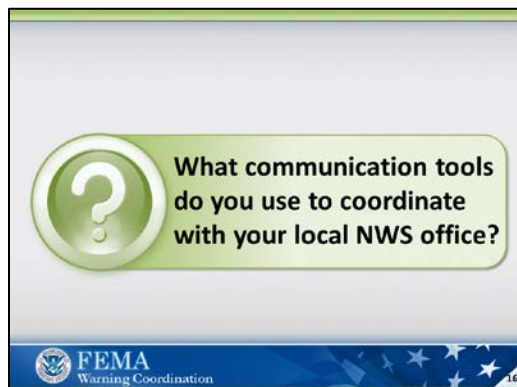
Photo Credit: NOAA




Role of the National Weather Service

The NWS is the federal agency with the responsibility of issuing flood, weather, and tsunami warnings to the public. During the detection component, the NWS completes the following tasks:

- Monitoring, detection, and data analysis
- Prediction
- Information Dissemination
- Coordination



What communication tools do you use to coordinate with your local NWS office?



Role of NWS during Impact Assessment

- Interpretation
- Decision to warn
- Warning method and content

NATIONAL WEATHER SERVICE

URGENT - WINTER WEATHER MESSAGE
 NATIONAL WEATHER SERVICE BOSTON MA
 4 24 PM EDT THU JUL 9 2010

100004-001010
 /P/OM-BOS-WS-WS-0011-001100000-001100000/
 AUTOMATED CLASSIFIED MESSAGE
 1 4 24 PM EDT THU 9 JUL 2010

... WINTER STORM WARNING REMAINS IN EFFECT FROM 4 PM THURSDAY TO 10 PM FRIEDAY MORNING THIS WEEK...

A WINTER STORM WARNING REMAINS IN EFFECT FROM 4 PM THURSDAY TO 10 PM FRIEDAY...

... IMPROVING TO PARTLY CLOUDY WITH A FEW SLEETS... LOCALITY UP TO 1/8 INCH OF SNOW... AT SAFE FALLS... LOWER RAINFALL... BELOW 1000 FEET... TO 2 INCHES...

* LOCATIONS IMPACTED INCLUDE... BURLINGTON... BURLINGTON II... WINDS TO 10 MPH...

PREPARED BY: [unreadable]

FEMA
Warning Coordination

The NWS has several key roles in the impact assessment function of the warning process:

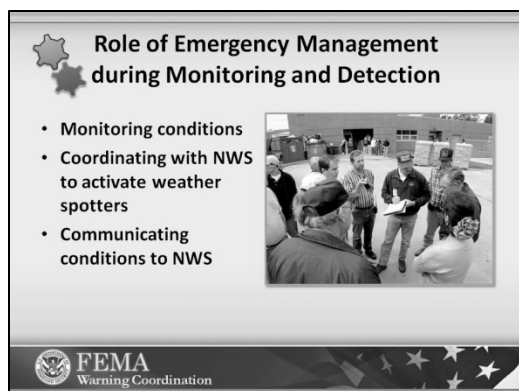
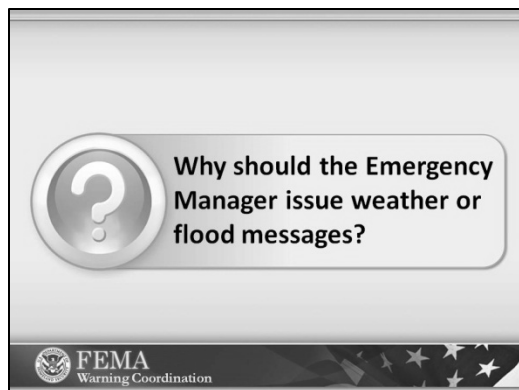
- Interpretation
- Decision to warn
- Warning method and content

Role of NWS during Public Response

- Monitoring actions of:
 - Public
 - Media
 - Emergency Manager
- Seeking feedback about:
 - Products
 - Areas for improvement

FEMA
Warning Coordination

The NWS role of monitoring the response to warnings is not limited to the public, but also includes monitoring the actions of the media, as well as the emergency manager. Reports from local officials are often included in NWS messages. This local information can greatly improve public response.



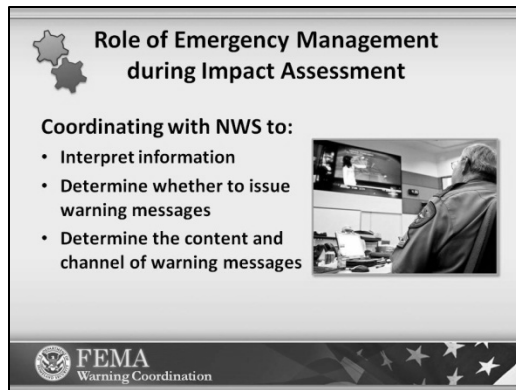
Role of Emergency Management

Did you know?

Sometimes, emergency managers can relay conditions to NWS before those conditions can be seen on radar. For example, during the Mother's Day weekend tornado that occurred in Oklahoma and Missouri on May 10, 2008, Warnings were issued based on weather spotter reports. This is just one example of the critical information that local spotters and emergency officials can provide to NWS. A link to a report about this event has been provided in the resources appendix.

During the monitoring and detection component, emergency management officials perform the following tasks:

- Monitoring conditions
- Coordinating with NWS to activate weather spotter groups
- Communicating conditions to NWS



Role of Emergency Management during Impact Assessment

Coordinating with NWS to:

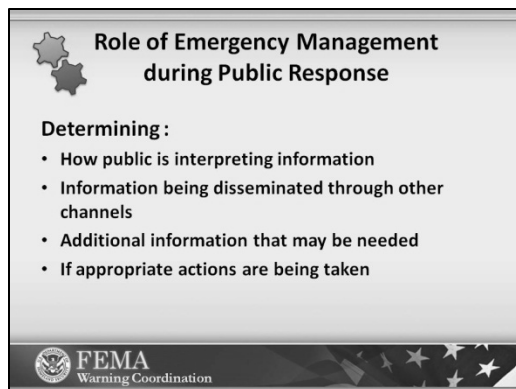
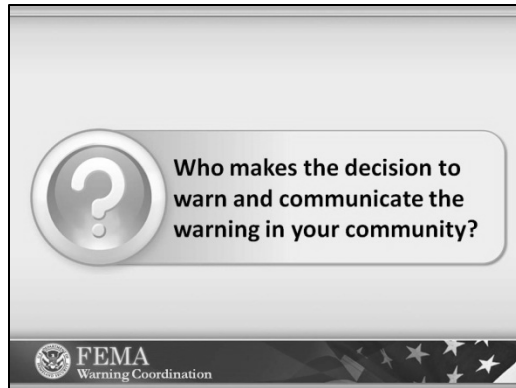
- Interpret information
- Determine whether to issue warning messages
- Determine the content and channel of warning messages

FEMA
Warning Coordination

Remember, the purpose of the Impact Assessment component is to evaluate information and issue warning messages. For weather and flooding, *both* the NWS and local emergency management are involved. Coordination of information and warning messages is critical to avoid communicating conflicting information to the media and the public at risk.

Emergency management officials coordinate with NWS in the following activities during Impact Assessment::

- Interpretation
- Determining whether to issue warning messages
- Determining the content of warning messages
- Determining the channel of warning messages

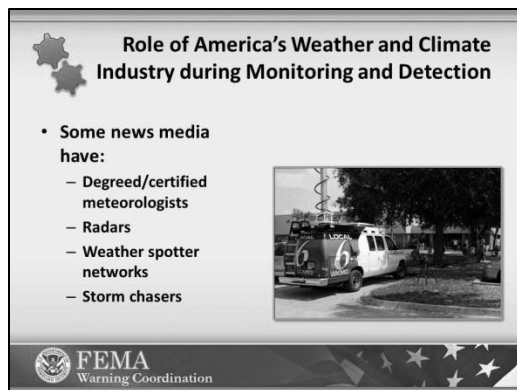


Emergency managers must monitor the response to a warning message to determine how the public is interpreting the information, what information is being disseminated by other channels, and what additional information is needed. Local officials must also determine if those at risk are taking the correct protective actions in a timely manner.

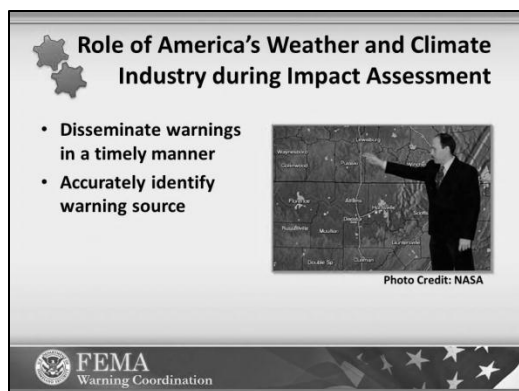
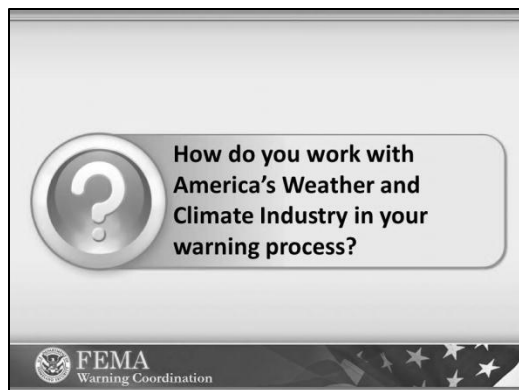


Role of America's Weather and Climate Industry

Remember, America's Weather and Climate Industry includes local television meteorologists, consulting firms, and private companies. The role of this Integrated Warning Team partner may vary depending on the community.

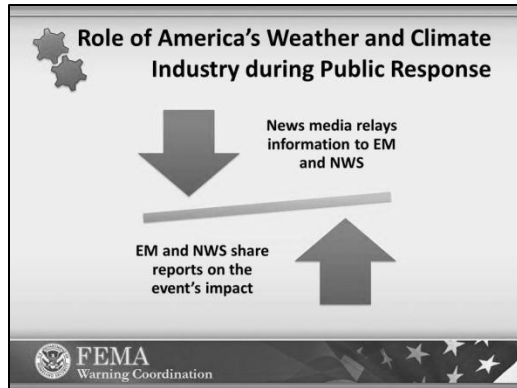


The media may or may not have a formal role in detecting hazardous weather events in your area. Private-sector weather, water, and climate information service providers may have the responsibility of coordinating their detection and management efforts with the local emergency manager.



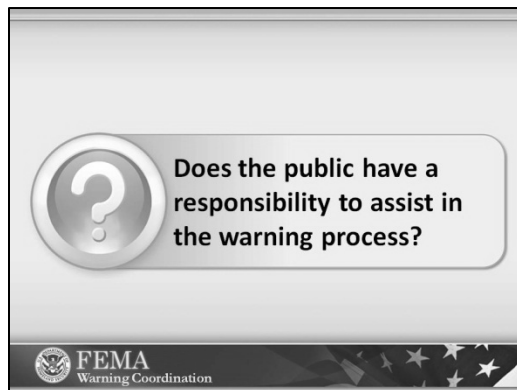
The responsibility of the media in the impact assessment component of the warning process is to disseminate a warning or warning message in a timely manner, accurately identifying the source.

From this standpoint, the media are critical, because without them, warnings would not get out. If your operation has a Public Information Officer (PIO), that person can help you coordinate with the news media.



Remember, the Public Response component of the warning process is composed of interpretation, confirmation, and response action.

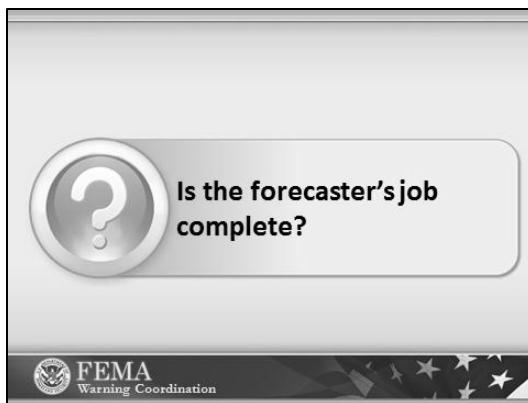
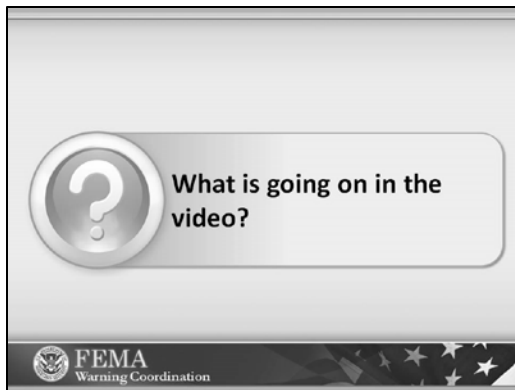
The weather industry may be very helpful in monitoring public response and relaying that information back to the emergency manager and the NWS. The emergency manager and the NWS can share reports via NWSChat, which helps them with their reporting to the public. It is a true collaborative effort.

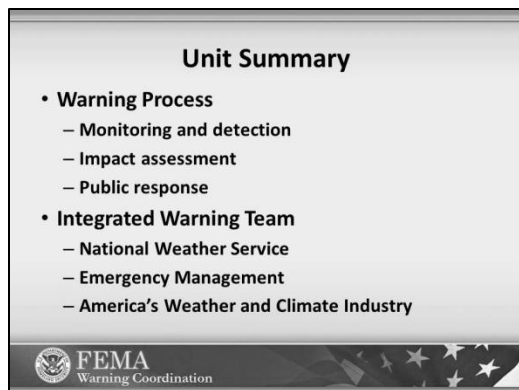




Video: Storm Watch

You will now watch a portion of a video that, while a bit dated, clearly shows the warning coordination process.





Unit Summary

Something to think about...

What did you learn in this unit that can help you improve warning coordination in your community?

The warning process includes a series of activities that work together for an effective warning system. These include three main components: monitoring and detection, impact assessment, and public response.


The success of the Integrated Warning Team means all members are working together throughout the entire warning process. It involves an optimal collaboration where information is shared and warnings are coordinated no matter which team member is originating the message. An evidence-based, detailed and consistent warning message must be given to the people at risk. Multiple dissemination pathways including personal channels must be utilized. The greater the trust that exists between the warning providers and the target audience, the more likely protective action will be taken by those in harm's way.

Warning Technologies

The following list includes some of the technologies with which you should be familiar as a means of receiving and/or disseminating warning messages. If you are not familiar with any of the technologies, be sure to ask your instructor for an explanation. If you can think of other technologies that are available in your area, add them to the list.

- Integrated Public Alert and Warning System (IPAWS)
- Emergency Alert System (EAS)
- NOAA Weather Radio
- Mobile device notification services (e.g., iNWS)
- Commercial Mobile Alert System (CMAS)/Wireless Emergency Alerts (WEA)
- Automatic Dialing Telephone System
- NWS Chat
- Social Media tools (Twitter, etc.)
- Point-to-Multi-Point Communication (“web” communication system)
- Non-Dialing/Central Office-Based Telephone System
- Fax and Telephone Bridges
- E-mail
- Outdoor Sirens
- Vehicle Sirens or Horns
- Aircraft with Loudspeakers
- Cable Television Override
- Residential Route Alerting
- Door-to-Door Route Alerting
- EMWIN
- HazCollect

What warning communication technologies does your community currently have in place?



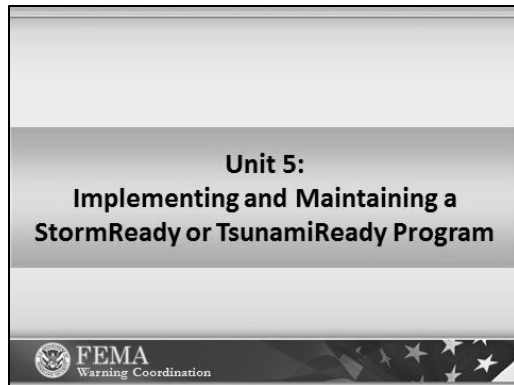
Implementing and Maintaining a StormReady or TsunamiReady Program

Unit Objectives

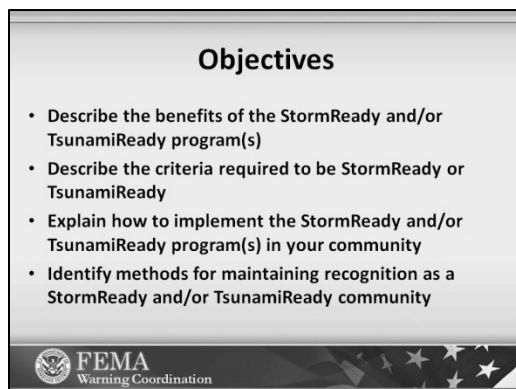
This unit provides an overview of the StormReady and TsunamiReady programs. By the end of this unit, you will be able to:

- Describe the benefits of the StormReady and/or TsunamiReady program(s).
- Describe the criteria required to be StormReady or TsunamiReady.
- Explain how to implement the StormReady and/or TsunamiReady program(s) in your community.
- Identify methods for maintaining recognition as a StormReady and/or TsunamiReady community.

Note that the instructor may choose to present only portions of this unit, depending on the needs of the majority of the class.



Unit Overview





The StormReady and TsunamiReady programs encourage communities to take a proactive approach to improving local hazardous weather and tsunami operations and public awareness.

In this unit, you will learn about the benefits of these programs and how your community can become StormReady or TsunamiReady and maintain that recognition.

What are StormReady and TsunamiReady?

Grassroots programs that:

- Improve communication and preparedness
- Provide guidance for preparedness programs
- Strengthen local safety programs
- Prepare communities for hazards



What are StormReady and TsunamiReady?

StormReady and TsunamiReady are programs that focus on improving communication and severe weather/tsunami preparedness in communities. These programs strengthen local safety programs, prepare communities for hazards, and provide community leaders and emergency managers with guidance on improving their warning and weather preparedness programs.

StormReady History

- Began in 1999 in Tulsa, Oklahoma
- Focused on education about storm safety
- Implemented a planning system for severe weather



Did you know?

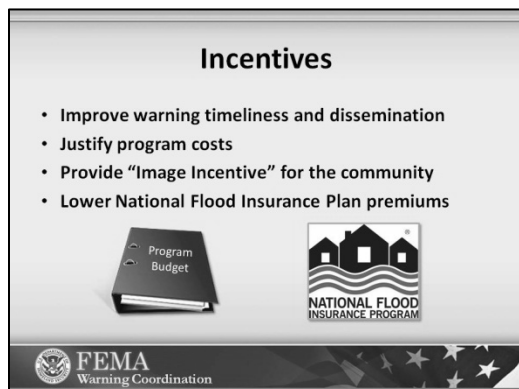
Latimer County, OK, and Wilburton, OK, are the longest active StormReady communities, since February 22, 1999.

StormReady began in Tulsa, OK, in 1999 as a local effort to educate residents about storm safety. StormReady addressed a need for a planning system to help communities prepare for severe weather.

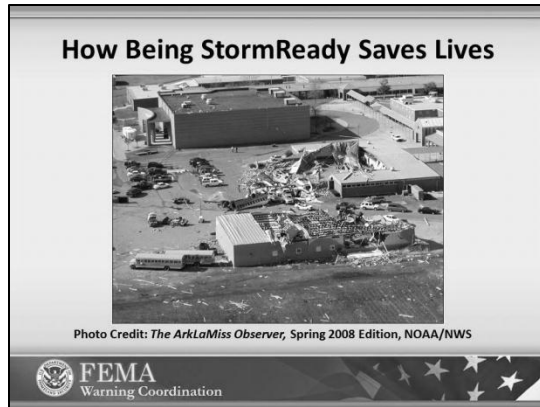
***Did you know?***

Ocean Shores, WA, is the longest active TsunamiReady community, since June 30, 2001.

TsunamiReady was established in 2001 as a simple extrapolation of StormReady. TsunamiReady helps fill a similar preparedness planning need at the local level for the tsunami hazard.



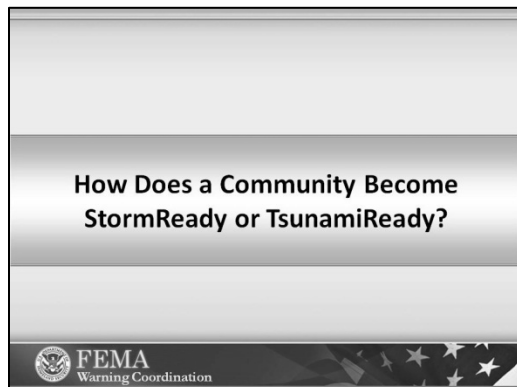
Incentives for a community to become StormReady and/or TsunamiReady include saving lives during severe weather events, improving effectiveness of severe weather/tsunami warnings, helping local emergency managers justify costs for natural hazards-related programs, providing an “image incentive” to the community, encouraging surrounding areas to improve their preparedness programs, and receiving up to 25 Community Rating System (CRS) Points to possibly lower National Flood Insurance Plan (NFIP) premiums.



In 2008, a school complex in Mississippi was struck by an EF3 tornado. Thanks to early warning and storm readiness, everyone at the school made it through without injuries.

Want to know more?

A link to more information about this case study and others referenced in this course is included in Appendix B.



How Does a Community Become StormReady or TsunamiReady?



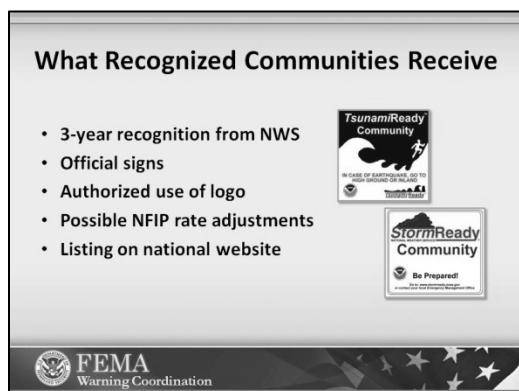
To be recognized as StormReady and/or TsunamiReady, the community must:

- Operate a communication/dispatch center that serves as a 24-hour Warning Point and an emergency operations center (EOC).
- Have more than one way to receive critical warning information.
- Have more than one way to alert the community.
- Be able to monitor locally evolving weather.
- Conduct a number of hazardous weather and/or flood safety activities.
- Address hazardous weather and flooding in its formal Emergency Operations Plan (EOP). This should include training weather spotters and conducting emergency exercises.
- Address the tsunami hazard in their Emergency Response Plan (for TsunamiReady only).



The basic process for being recognized as StormReady/TsunamiReady is listed below:

1. The community contacts the local NWS forecast office to apply.
2. The State StormReady/TsunamiReady Board reviews the application.
3. The State StormReady/TsunamiReady Board representative verifies that all recognition criteria are met.
4. If criteria are not met, the Board suggests improvements and helps implement those.
5. Once all criteria are met, a recognition ceremony is held for the community.

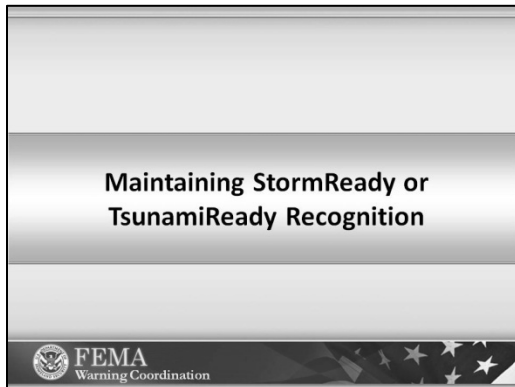


Want to know more?

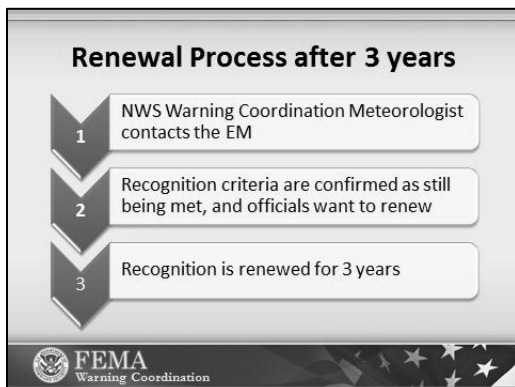
A link to the StormReady/TsunamiReady website is included in Appendix B.

Successful applicants receive a StormReady/TsunamiReady recognition letter, official signs and logo usage, and a listing on the national website.

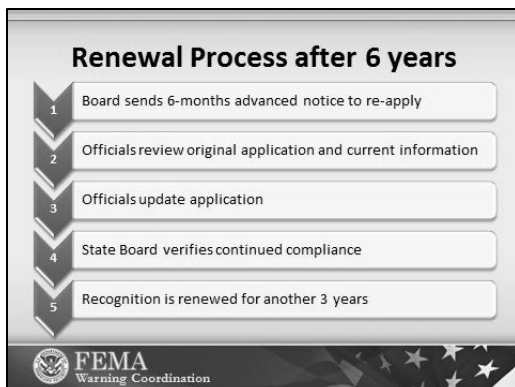
In addition, StormReady jurisdictions can forward a copy of their recognition letter to their Insurance Services Organization (ISO)/Community Rating System (CRS) Specialist for details on possible flood insurance rate adjustments.



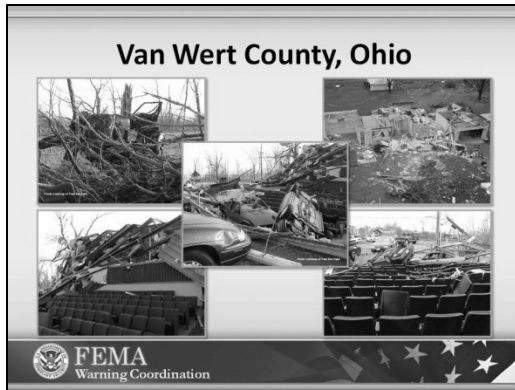
Maintaining StormReady or TsunamiReady Recognition



Renewal after the first three years includes confirmation that recognition criteria are still being met and a desire by officials to renew.

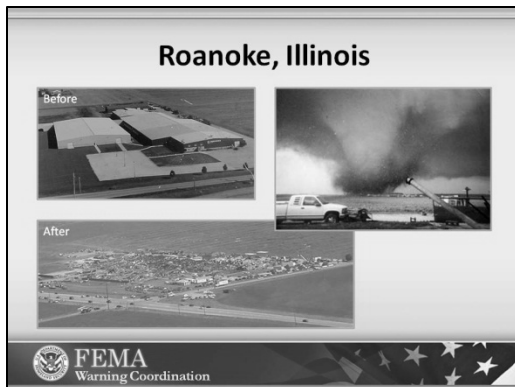


Renewal after six years includes reverification of continued compliance with recognition criteria, updating any new technology information, and a desire by community officials to continue the program.



Examples of StormReady Success

Using warning systems established during the StormReady process, Van Wert County emergency management officials helped safely evacuate more than 50 people from a movie theater before it was destroyed by an F4 tornado in November, 2002.





In 2004, an F4 tornado demolished a manufacturing plant in Roanoke, IL. The 140 employees survived without harm thanks to being StormReady.

The plant owner deserves recognition for the work involved in building storm shelters for all the employees.

Unit Summary

- Increases community's preparedness for hazardous weather
- Increases warning efficiency





Unit Summary

Something to think about...

What did you learn in this unit that can help you improve severe weather preparedness in your community?

The StormReady and TsunamiReady programs were created in order to provide communities the means to better protect their citizens and property during severe weather and tsunamis. These programs take a proactive approach in preparing for hazardous weather. Communities that become certified improve the timeliness and effectiveness of communicating warnings of severe weather to the public.

VI Warning Exercises

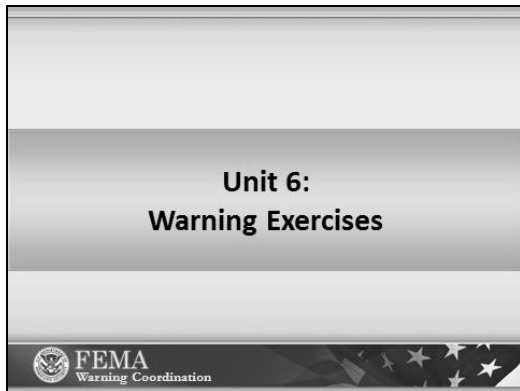
Unit Objectives

In this unit, you will propose improvements to a community's warning system based on identified breakdowns in coordination and communication.

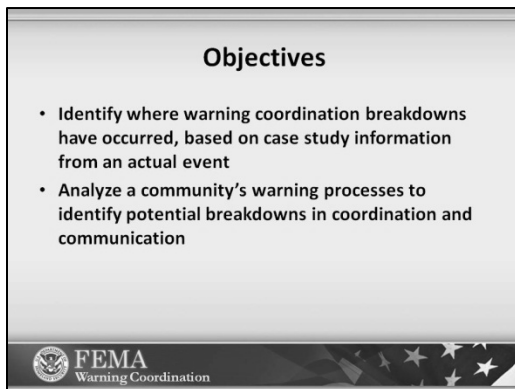
By the end of this unit, you will be able to:

- Identify where warning coordination breakdowns have occurred in a warning system, based on case study information from an actual event.
- Analyze a community's warning processes to identify potential breakdowns in coordination and communication.

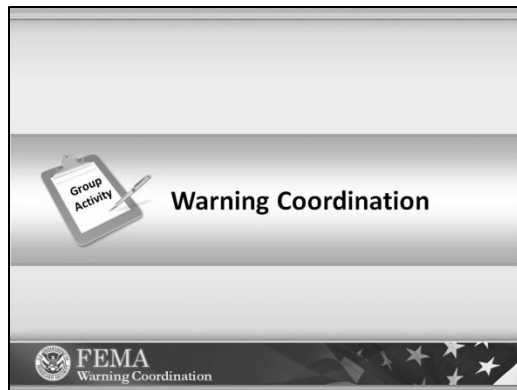
You will need the Warning Annex for your community's Emergency Operations Plan for an activity in this unit.



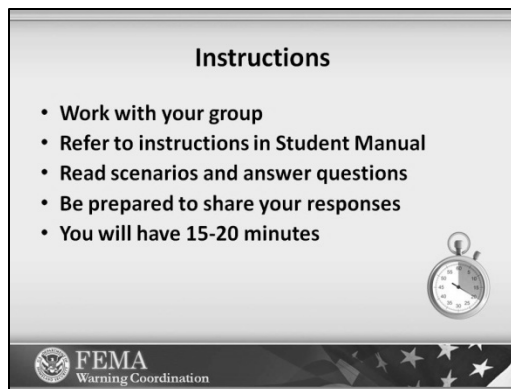
Unit Overview



This unit will give you the opportunity to practice what you have learned about warning messages. In the first activity, you will read several case studies and analyze the warning messages. In the second activity, you will refer to the Warning Annex you were asked to bring with you to the course.



Small-Group Activity: Warning Coordination



As directed by your instructor, complete the activity on the following pages.

Warning Coordination



Purpose: This activity will provide you with an opportunity to analyze information from an actual event and make decisions about why the coordination of the warning message dissemination was inadequate and how the coordination could be improved in the future.

Instructions: Use the steps below to complete this activity:

1. Working in your table group, review the case study that is assigned by the instructor.
2. Discuss the case study with your group and answer the related questions.
3. Select a spokesperson to present your group's case study and responses to the class.

NOTE: Most scenarios in this activity are based on actual events, but details of the events have been altered for the purpose of instruction.

Warning Coordination Case Study #1

Northern Plains Tornado Outbreak

The day's early morning Convective Outlook from the Storm Prediction Center (SPC) predicted a "moderate risk" of severe thunderstorms for a large area across the northern Plains states, including eastern Montana, eastern Wyoming and the Dakotas, for that afternoon and night. Local NWS forecast offices issued Hazardous Weather Outlooks further refining the severe weather threat predicted by the SPC.

Severe weather occurred during the midday hours in Wyoming, and the SPC issued a Tornado Watch for a large area, including much of Montana, Wyoming, North Dakota, South Dakota and Nebraska. The watch was valid for 7 hours. Additionally, this watch included "THIS IS A PARTICULARLY DANGEROUS SITUATION" wording which indicates rare situations when long-lived, strong, and violent tornadoes are possible.

Then, local NWS offices issued several Tornado and Severe Thunderstorm Warnings across eastern portions of Montana and Wyoming. There were numerous reports of power and telephone outages, but severe weather and damage reports were spotty and sketchy at best given the rural nature of this region. At 8:00 p.m., the local NWS office issued Severe Thunderstorm Warnings for two long lines of storms covering a large portion of western South Dakota.

At 8:15 p.m., a tornado destroyed the NWS' Doppler weather radar in Rapid City, South Dakota, significantly hindering warning operations. Adjacent Doppler radars were located too far away to effectively monitor these severe storms. This caused the local NWS office to revert to its back-up capabilities: satellite, automated weather observation sensors, and reports from emergency managers, the news media, Skywarn weather spotters, and storm chasers. Despite the best efforts of all involved, several warnings were too late or missed completely.

Under these circumstances, 44 persons died as 15 tornadoes ravaged the western part of South Dakota.

Warning Coordination, Case Study #1 Questions

Northern Plains Tornado Outbreak

1. What additional measures might have been taken to avoid this situation?
2. What could have been done differently to monitor the storms and disseminate the warnings?
3. What can the severe weather warning coordination partners (emergency management, first responders, news media, NWS, etc.) specifically do to plan for "worst-case" scenarios such as this?

Warning Coordination Case Study #2

Father's Day Tornado Outbreak

On the Saturday before Father's Day, the Storm Prediction Center (SPC) issued a Day Two Convective Outlook calling attention to Louisiana as being at risk for severe thunderstorms during the following day. On Saturday afternoon, forecasters at the Weather Forecast Office (WFO) in New Orleans/Baton Rouge, Louisiana, called for severe weather across the state on Sunday and Sunday night. At 1:00 a.m. on Sunday, April 9, the SPC upgraded the risk in its Day One Convective Outlook to include a "moderate risk" of severe thunderstorms. At 5:45 a.m. on Sunday, the WFO issued a Special Weather Statement emphasizing the potential for severe weather in portions of Louisiana.

The SPC issued a Tornado Watch at 9:18 am on Sunday that covered large portions of Louisiana, including Richardson Parish, where the Grace United Church was located. The WFO updated its forecasts to draw attention to the severe thunderstorm risk. For several hours prior to issuing a Tornado Warning for Washington Parish, it issued numerous Severe Thunderstorm and Tornado Warnings for nearby counties. The Tornado Warning for northern St. Tammany, southern Washington, and eastern Tangipahoa Parishes was issued at 11:27 a.m. It was broadcast immediately on NOAA Weather Radio, NAWAS, and NOAA Weather Wire. The Grace United Church is in the NOAA Weather Radio area of coverage but did not have a NOAA Weather Radio or anyone monitoring weather information on radio or television. NOAA Weather Radio broadcast the warning at 11:27 a.m. and again at 11:29 a.m. The warning also went out on the state law enforcement telecommunications system after being manually typed in. Numerous television and radio stations broadcast the various Tornado and Severe Thunderstorm warnings in the area. A local radio station broadcast the Tornado Warning for Washington Parish at about 11:32 a.m.

Prior to the warning, local emergency management officials tried to deploy all storm spotters but had difficulty finding available spotters. The local emergency manager indicated that he received the Tornado Warning. Local police and other officials tried to disseminate the warning. One police officer spotted the tornado at 11:39 a.m., just before it struck the Grace United Church, but did not have time to warn the congregation.

As a result of the tornado, 20 people died and 90 were injured when the Grace United Church was struck. All of those killed and injured were in the sanctuary when the roof and walls collapsed.

Warning Coordination Case Study #3

Hurricane Havoc

The National Hurricane Center (NHC) had been tracking a large hurricane for several days as it approached the Florida coast. The latest Weather Forecast Office (WFO) and NHC forecasts indicated that the hurricane would begin moving away from the coast during the night and weaken rapidly. The forecasts also indicated that atmospheric shearing would continue.

One of the local television stations, however, was broadcasting a forecast prepared by a private vendor. That forecast called for the storm to make landfall within 24 hours.

The conflicting forecasts placed tremendous pressure on both the NWS and local emergency management officials when their offices were flooded with calls from concerned citizens. Some citizens were taking action based on the television forecast. Others acted based on the NWS forecast. Most were seeking additional information from a variety of sources to assess their own risk in light of the conflicting information. Also, local and state officials were concerned about which forecast to use as a basis for emergency management decision making.

Warning Coordination Case Study #4

Flash Flood

On the evening of June 14, severe flash flooding occurred on West Fork and Pine Creeks near Georgetown, a community on the Ohio River in northwest West Virginia. The weather situation that developed was typical for June, but a series of events focused over the headwaters of West Fork and Pine Creeks that evening produced catastrophic consequences.

There had been no recorded history of flash flooding on either of these two creeks. Consequently, public awareness of the possibility of a flood was lacking.

The flood developed in an extremely short period of time. Unofficial estimates of up to five inches of rain fell over the area with three to five inches falling between 8:30 and 9:45 p.m., Eastern Daylight Time (EDT), on the headwaters of the two creeks. The resulting flood, described by some eyewitnesses, produced a 10- to 30-foot “wall of water” which began at the headwaters between 9:15 and 9:30p.m. EDT, and reached the Ohio River around 10 p.m., EDT.

At least 26 people died due to flooding in the area. In addition, numerous vehicles were demolished, 80 residences were destroyed, and another 250 homes and businesses sustained various degrees of damage.

The local Weather Forecast Office (WFO) issued a Flood Watch at 7:41 p.m., EDT, approximately 2 hours prior to the Georgetown flash flood. Although the WFO also had warning responsibility for the Georgetown area, neither radar data nor ground truth reports prior to or during the flood indicated the magnitude of the rainfall that occurred over the West Fork and Pine Creek drainage areas. Reports of flooding did not reach any NWS office until after the flood ended.

The Flood Watch issued by the WFO was given timely distribution by the local media to residents in the area, and many people in the flood area reported seeing the watch on television or hearing it on commercial radio. NOAA Weather Radio (NWR), on the other hand, was ineffective due to poor reception in many areas of the county. Also, few people in the flood area had NWRs, and virtually none had weather radios with the “tone alert” feature.

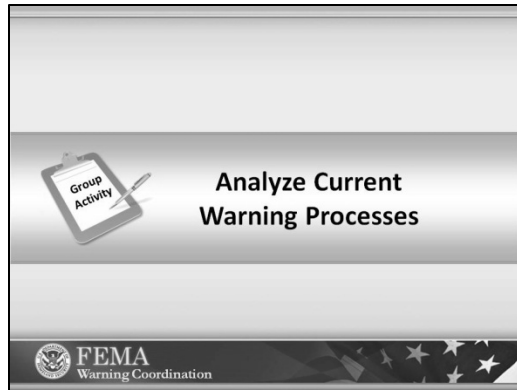
Dissemination of the Flood Watch through emergency management channels was not completely effective. The watch was received successfully by the County Sheriff’s Office through official channels, but further distribution of the watch to the Georgetown Police or to the county Emergency Management Coordinator was not successful. However, the emergency management offices and many residents in the flood area became aware of the watch through commercial radio and television stations.

Warning Coordination Case Study #4

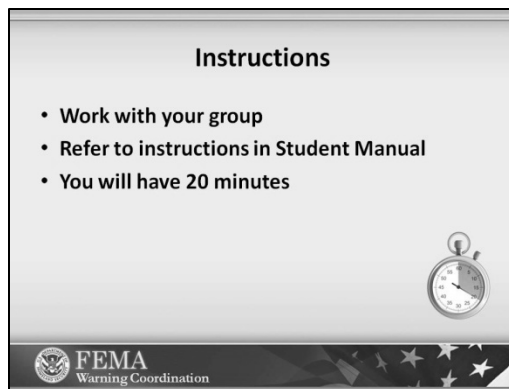
Flash Flood

1. What additional measures might have been taken to avoid this situation?

2. What steps could local officials take to prevent a similar situation from occurring in the future?



Small-Group Activity: Analyze Current Warning Processes



As directed by your instructor, complete the activity on the following pages.

You will need the Warning Annex to your community's EOP for this activity.

Analyze Current Warning Processes



Purpose: This activity will provide you with an opportunity to review a warning annex to highlight tasks or functions that appear to work well and to identify areas where improvement might be required.

Instructions: Use the steps below to complete this activity:

1. Working in your table group, select a specific weather hazard that is likely to affect your community.
2. Refer to your community's local Warning Annex and the information about warning annexes that is included in this activity (after the worksheets).
3. Use the worksheets provided to identify:
 - Tasks or functions that the group thinks work well, and some basic reasons for their success
 - Areas in which improvement is required, along with one or more *specific* suggestions
4. Be prepared to discuss your group's responses with the class.

Worksheet #1: Analyzing Successes

Discuss with your group areas of your EOP's Warning Annex that work well for a particular hazard and record the factors that contribute to the success of each task or function.

TASK / FUNCTION	REASONS FOR SUCCESS

Worksheet #2: Analyzing Areas for Improvement

Discuss with your group areas of your EOP's Warning Annex that may not work well for a particular hazard and record some ideas for improving each task or function.

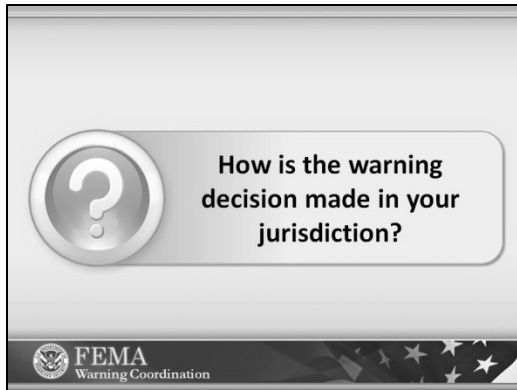
TASK / FUNCTION	PROBLEM / ISSUE	SUGGESTION(S) FOR IMPROVEMENT

Basic Information about Warning Coordination Annexes

The Warning Annex deals with the dissemination of timely forecasts of all hazards requiring emergency response actions to the appropriate government officials and the public. The purpose of the annex is to describe all components of the jurisdiction's warning systems and processes and the responsibilities and procedures for using them.

Typically, the Warning Annex includes the following topics:

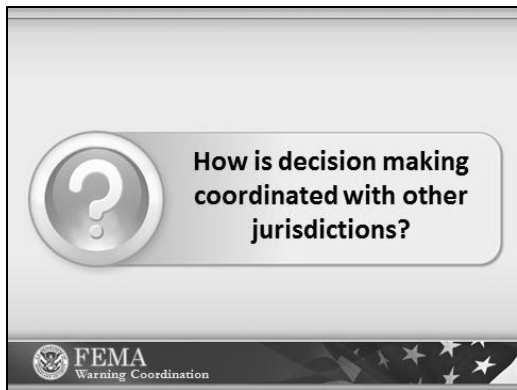
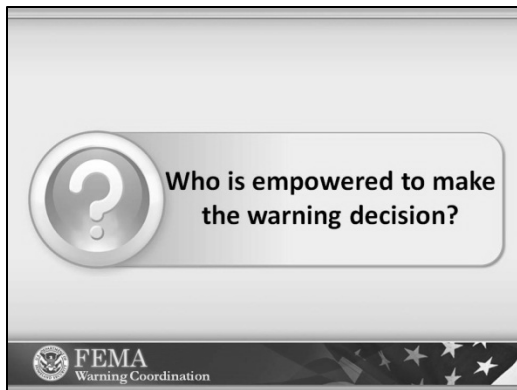
- **Situation.** Describes the kinds of emergency conditions that could require activation of emergency warning systems, and the warning sites that will be relied upon to alert emergency responders and warn the public.
- **Assumptions.** Includes all assumptions that apply to the warning systems that the jurisdiction may use during emergency operations.
- **Concept of Operations.** Provides general information on how warnings will be given within the jurisdiction and in cooperation with other jurisdictions, including:
 - How key government officials and emergency response organizations will be notified.
 - Methods and warning devices used to warn the public.
 - Types and locations of warning devices and their geographic coverage.
 - Procedures for warning special locations (e.g., schools, hospitals, major industrial sites, places of public assembly, etc.).
 - Procedures required to warn access and functional needs populations (e.g., nursing home residents) and other populations with additional needs (e.g., non-English speaking people).
 - Arrangements for alerting neighboring jurisdictions.
- **Organization and Assignment of Responsibility.** Specifies warning responsibilities that are assigned to the tasked organizations and individuals, including the Chief Executive Officer (CEO), Warning Coordinator, Emergency Operations Center (EOC) Manager, and others.
- **Administration.** Describes the administrative support requirements associated with the warning function, including procedural documents, and charts or maps.
- **Logistics.** Includes the specific logistical support requirements associated with the warning function, including provisions for:
 - Testing, maintaining, repairing, and replacing warning equipment.
 - Augmenting the jurisdiction's warning systems through agreements with private service agencies, personnel, equipment, and facilities.
- **Plan Development and Maintenance.** Describes who is responsible for coordinating revision of the Warning Annex, keeping attachments current, and ensuring that procedures and other necessary implementing instructions are developed and maintained.
- **Authorities and References.** Lists authorities and references that pertain to the Warning function.

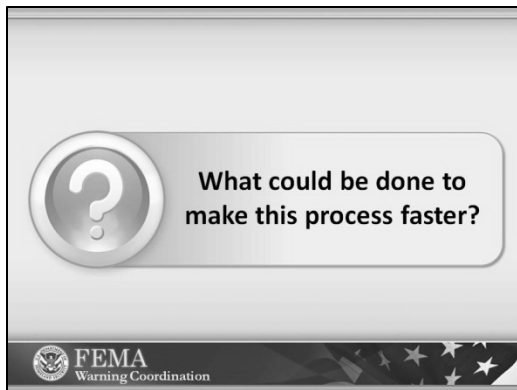
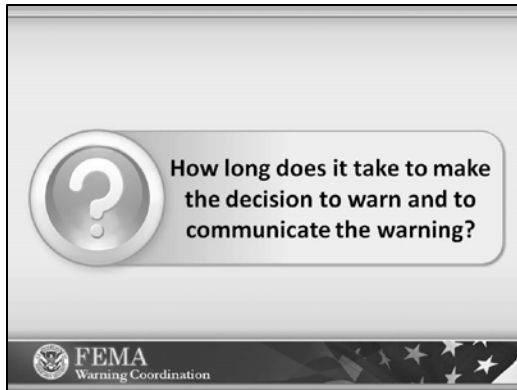


Unit Summary

Something to think about...

What did you learn in this unit that can help you improve the Warning Annex in your community?





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The Integrated Warning Team

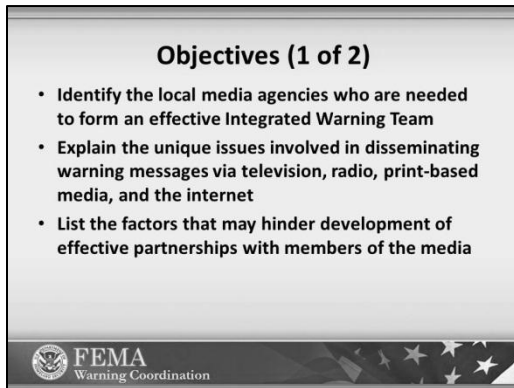
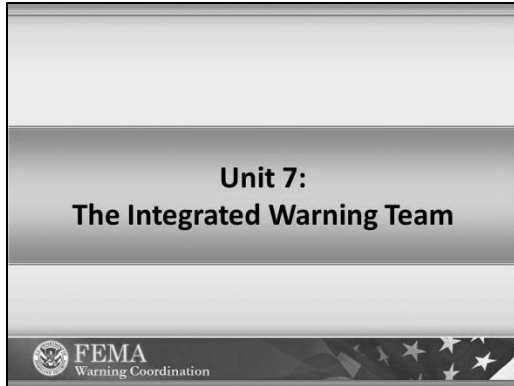
Unit Objectives

This unit will enable you to develop warning messages for a certain hazard that are targeted for delivery by a particular media type.

By the end of this unit, you will be able to:

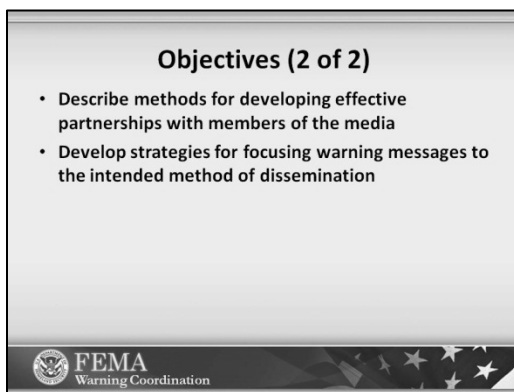
- Identify the local media agencies that are needed to form an effective Integrated Warning Team.
- Explain the unique issues involved in disseminating warning messages via television, radio, print-based media, and the internet.
- List the factors that may hinder development of effective partnerships with members of the media.
- Describe methods for developing effective partnerships with members of the media.
- Develop strategies for focusing warning messages to the intended method of dissemination.

Unit Overview



This unit will provide you with strategies for working with the media to ensure consistent dissemination of warning messages.

You learn about the unique issues in disseminating warning messages via types of media and which agencies should be involved.



You will also learn methods for developing effective partnerships with members of the media and strategies for focusing warning messages to the intended method of dissemination.



Overview of the Integrated Warning Team



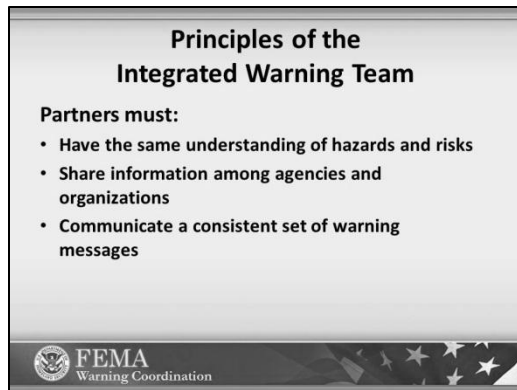
Something to think about...

Do you know who the local media contacts are in your community?

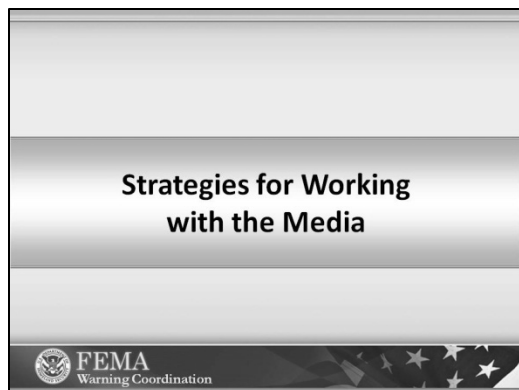
Remember, members of Integrated Warning Team include:

- Federal, State, local, tribal, and territorial emergency management officials
- The NWS
- America's Weather and Climate Industry (news media and private weather forecasters)

These sources must share information with each other and coordinate to effectively communicate a consistent warning message to the public.

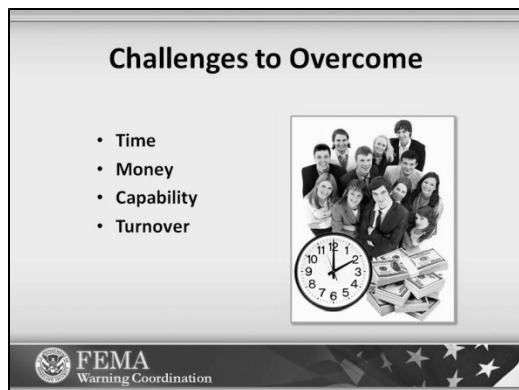


The concept of the Integrated Warning Team is critical to the operation of an effective community integrated warning system. The public must receive a consistent set of warning information to ensure the correct protective response.

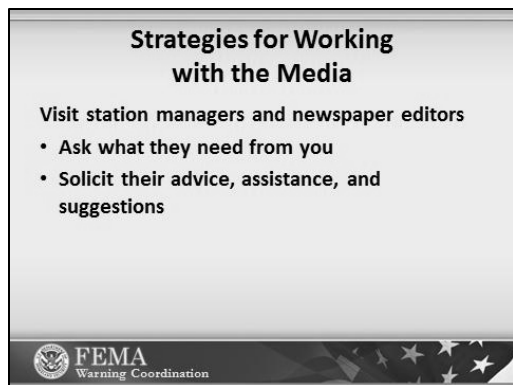


Working with the Media

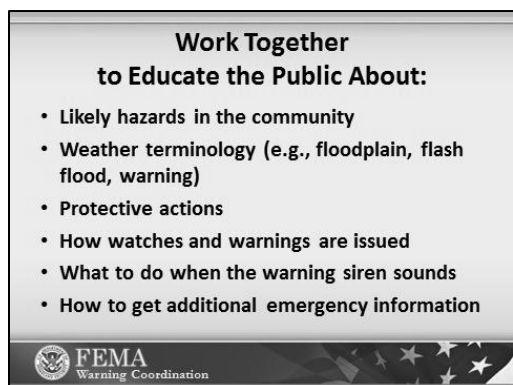
Long before the next emergency occurs, the NWS, State, local, tribal, and territorial emergency services personnel, and the members of the media should meet to talk about how to provide lifesaving information to the public. Ideally, these discussions would lead to the development of plans and systems for timely and effective warnings. These plans and systems would be exercised periodically and tested to ensure that they work.



There are major challenges in developing an effective warning partnership with the media. The news media are in a deadline-driven, highly competitive business, making time and money major concerns. Frequent changes in capability also present a challenge. Additionally, there is a rapid turnover in the media making it difficult to establish and maintain an effective partnership.

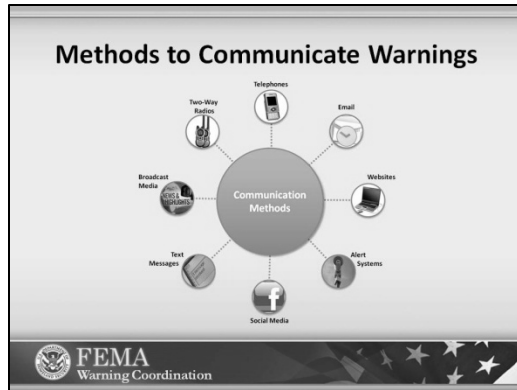


To develop a media partnership, start by visiting the managers of broadcast stations and editors of newspapers that have participated in past public education and warning efforts. Ask them what they need from you that would make it easier for them to provide lifesaving information. Solicit their advice and assistance in preparing clear, concise messages, maps, etc. and in promoting better participation and support throughout their industry.



An effective warning **must** be preceded by effective public information. Media partners can help the public understand:

- Likely hazards in the community
- Weather terminology
- Appropriate protective actions
- How watches and warnings are issued
- What to do when a warning siren sounds
- How additional emergency public information may be provided (including when the electricity is out)

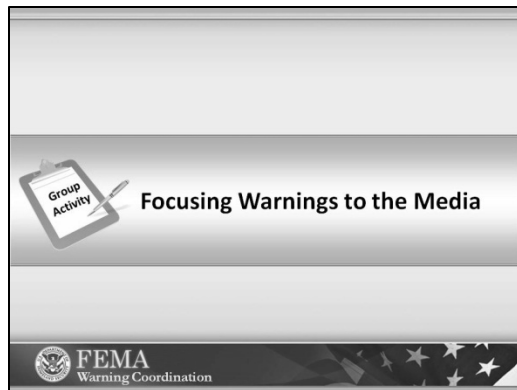


There may be a variety of media that can provide public information in addition to the daily newspapers, radio, and television. Consider local magazines, school newspapers, telephone books, stuffers with utility bills, and the local community access channel on cable television. There are many other methods and tools available for disseminating warning messages.

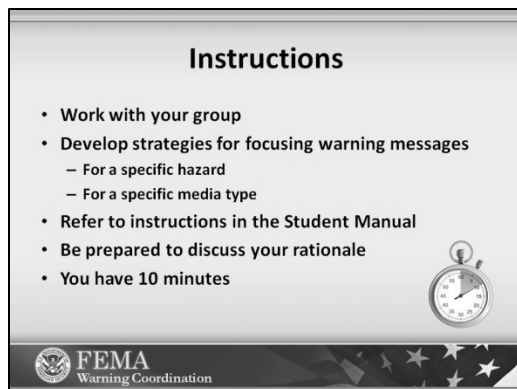




Panel Discussion



Small-Group Activity: Focusing Warnings to the Media



As directed by your instructor, complete the activity on the following page.

There is a page at the end of this unit called “Maximizing Media Impact for More Effective Warnings” that summarizes issues for each segment of the media.

Focusing Warnings to the Media



Purpose: This exercise is intended to help you understand the ways in which different types of media differ from each other and to help you think about how to focus your warning messages to the different media in your area.

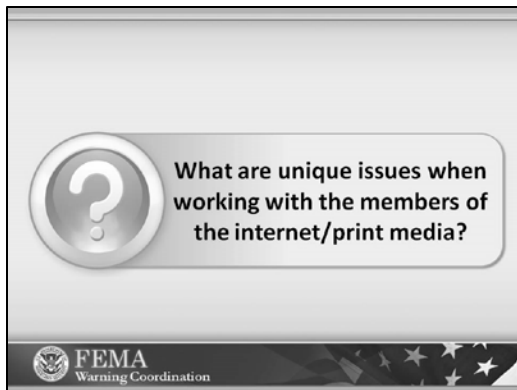
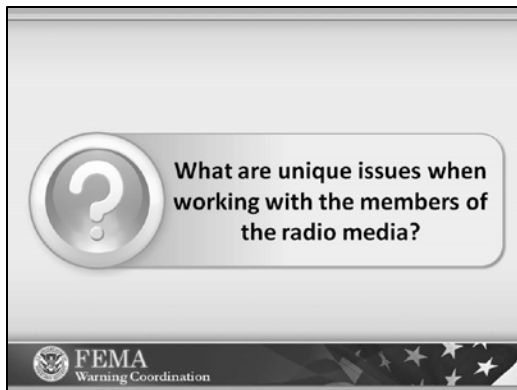
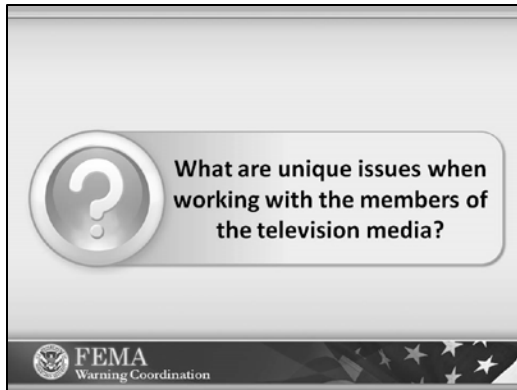
Instructions: Use the steps below to complete this exercise:

1. Working in your table group, develop strategies for focusing your warning messages to the medium assigned to your group by the instructor.
2. Be prepared to present your group's rationale for why a particular strategy would be effective for the medium assigned.
3. Use the space below to list your group's strategies for focusing warning messages on your assignment.

Unit Summary

Something to think about...

What have you learned in this unit that will help you coordinate more effectively with your Integrated Warning Team partners?



Maximizing Media Impact for More Effective Warnings

Television

TV news and weather are making more and better use of visual aids (e.g., radar images and computer graphics) to help educate and heighten viewer awareness. In the days leading up to a significant weather event, NWS Outlooks from the Storm Prediction Center (tornado outbreaks) and the National Hurricane Center are providing viewers with an initial heads-up that they need to pay attention to the weather in the coming days. Similarly, outlooks that forecast potential flooding could be used more often by showing large-scale maps indicating known flood problem areas. Broadcasting pictures of past floods, live shots of stream gauges, and interviews with Emergency Managers, NWS staff, and public works officials all could have a significant impact on the number of people who respond to the information being conveyed.

Reports should emphasize the most important safety measures for each threat. If printed hazard- and family-preparedness information is available in telephone books or in other widely disseminated sources, news reporters or TV meteorologists should remind the audience to refer to the appropriate pages or web sites to review the safety information.

For warnings, TV stations should be prepared to interrupt programming with a tone alert followed by a text and audio message. The message should be repeated in accordance with the State, local, tribal, and territorial EAS plans. It is strongly recommended that a symbol of the warning condition remain on the screen with a crawl message for the duration of the warning.

Radio

Radio is essential for reaching many different segments of the community at home, work, or on the road. If the community has significant numbers of people who do not speak English, there may be one or more radio stations that serve those audiences. Such stations may be the only way to warn that segment of the community quickly. As with TV, the message should be repeated in accordance with the EAS plans, but because radio cannot provide a continuous crawl message, the warnings should be repeated more often. Also as with TV, the message should include where to find additional safety information (such as the appropriate pages in the telephone book).


Radio stations also can broadcast in-depth interviews with Emergency Managers, NWS staff, and other officials to help the audience understand why they should take a developing weather event very seriously.

Internet, Newspapers, Magazines, and Other Print Media

When there is a longer lead time available for warning and preparedness, printed materials can be very helpful. Detailed maps, evacuation and shelter directions and other preparedness information should be printed in the local telephone book, if possible, or by direct mailing.

Printed materials should be designed to be clear, concise, and easily understood. A graphic artist can assist in making the materials visually interesting. Pictures, clip art, maps, and graphs should be used to illustrate text. Color also helps, but dots or crosshatching on maps to indicate evacuation zones or flood inundation areas will help colorblind people read the map more easily. If the community is large, inset maps that help show detail are preferable to large maps that are cluttered and hard to read.

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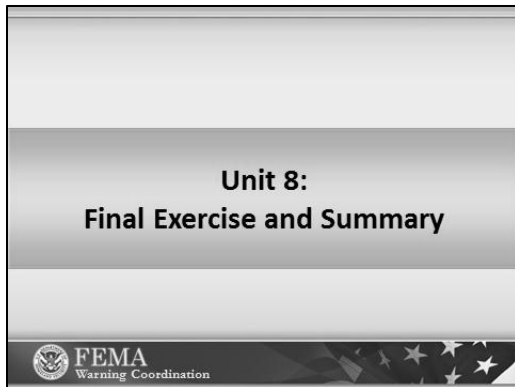
Final Exercise and Summary

Unit Objectives

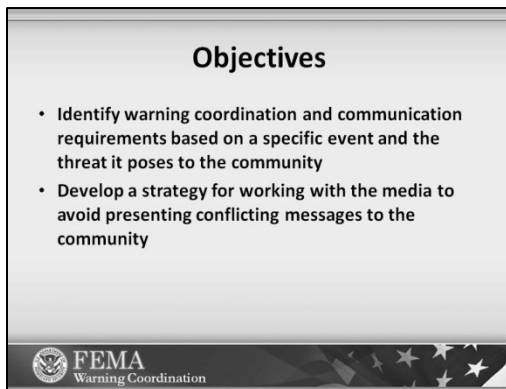
This unit consists of an exercise that challenges you to develop a warning coordination and communication strategy for a given scenario.

By the end of this unit, you will be able to:

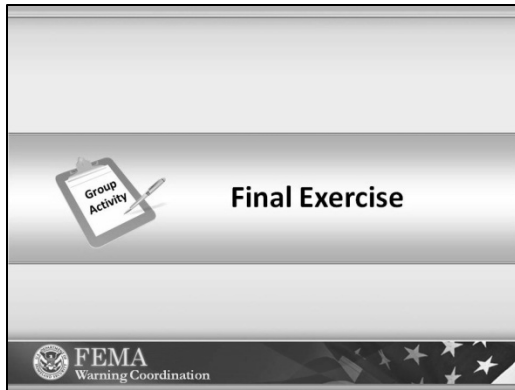
- Identify warning coordination and communication requirements based on a specific event and the threat it poses to the community.
- Develop a strategy for working with the media to avoid presenting conflicting messages to the community.



Unit Overview

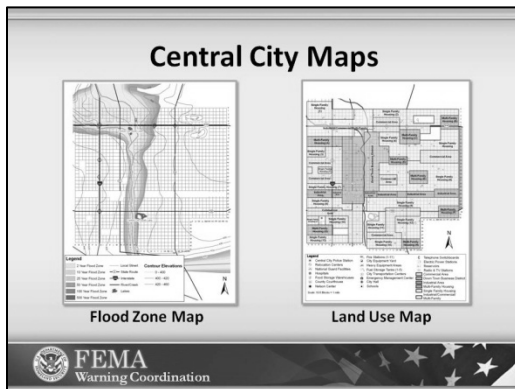
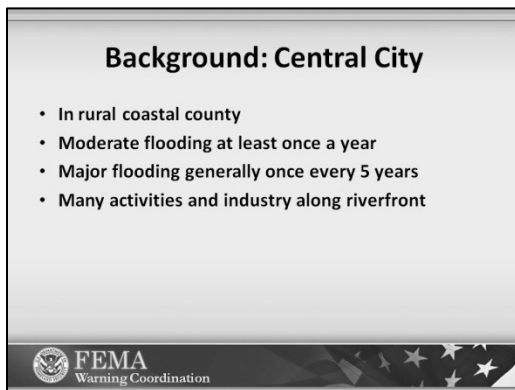


This unit will give you the opportunity to practice what you have learned through an exercise that challenges you to develop a warning coordination and communication strategy.



Final Exercise

This exercise presents a scenario that will require your group to make decisions about the steps that should be taken to develop, disseminate, and coordinate warnings.



Your instructor will provide these and additional maps of Central City and the surrounding region as handouts.

As directed by your instructor, review the background information and maps of Central City, the fictional setting for your scenario.

Final Exercise



Background

Central City is located in the State of Columbia, in Liberty County, which is a primarily rural coastal county. (Your instructor will provide maps.)

Central City is bisected by the Roaring River. A rain gauge system and staff gauge installation was established in 1992 to enhance predictability of flooding events. The system is owned and monitored by the Department of Emergency Management and the Liberty County Department of Public Works. Moderate flooding occurs in the city at least once a year, while major flooding is generally limited to one in five years. A severe flood in 1997 killed 28 people, injured 656, and caused the evacuation of 75,000. It also heavily damaged 377 permanent homes and 65 businesses, and completely destroyed 203 mobile homes.


The Central City riverfront is a center for local activities and industry. The river is flanked by a large industrial area on the west and the downtown business district on the east. Northside Park is also located along the Roaring River in northwest Central City. The park is scheduled to host a four-day music and art festival that begins in two days.


Concurrently with the music and arts festival, the annual Liberty County fair and rodeo is going on throughout the week. The Liberty County Fairgrounds are located just northwest of Central City and thousands of visitors have been pouring into the city for the events.

The Great Atlantic and Pacific Railroad, which runs through Central City, is operating at full capacity with three passenger trains per day and four freight trains. Some of the freight trains are loading and off-loading a variety of hazardous materials. High-pressure gas lines are located in the vicinity of the GA&P Railroad.

Instructions

- Discuss with your group
- Refer to course materials if needed
- Record your response on the flipchart
- Be prepared to share your response




 FEMA
Warning Coordination

As directed by your instructor, complete the activity on the following pages.

Monday Morning...

- Almost daily rain for past 2 weeks
- River at 26 feet and rising
- More rain predicted
- Could lead to wide-scale flooding

 FEMA
Warning Coordination

Current Situation

It is mid-May, and it has been raining for most of the past 2 weeks. The soil in and around Central City has reached saturation. The rains have caused the rivers to rise. The Roaring River at Central City is running at 26 feet, approaching its flood stage of 32 feet.

You are the emergency manager for Central City, Columbia. It is Monday morning. You arrive at your office to find that on Sunday evening, the NWS issued flood outlook products for the Central City area. Both the local NWS Weather Forecast Office's Flood Potential Outlook and the National Hydrometeorological Prediction Center's Excessive Rain Outlook call for the potential of heavy rains as the result of remnants of a tropical storm moving northward along the coast.

While still uncertain of its exact speed and track, NWS forecasters are drawing attention to existing soil conditions, the extreme amount of moisture in the storm and the potential for the system to stall as it collides with a cold front that is sliding southward. Forecasters indicate that if the storm stalls, it could produce more than a foot of rain in several days over the area. That much additional rainfall would lead to wide-scale flooding. The rain is predicted to begin tomorrow evening.


You decide to check the local television stations to see what their meteorologists are forecasting. Two of the local stations are predicting the rain to be to the east of Central City. The third is expressing concern about the heavy rain potential.

Instructions



1. Working with your group, review the scenario information carefully and discuss the question listed below.
2. Refer to other materials used during this course as you determine your response.
3. Record your group's response.
4. Be prepared to share your response with the class at the end of the exercise.

◇ **What warning coordination and communication steps would you take in your assigned role?**


Course Summary



What is the goal of the warning system?




What are the three main components of an integrated warning process?

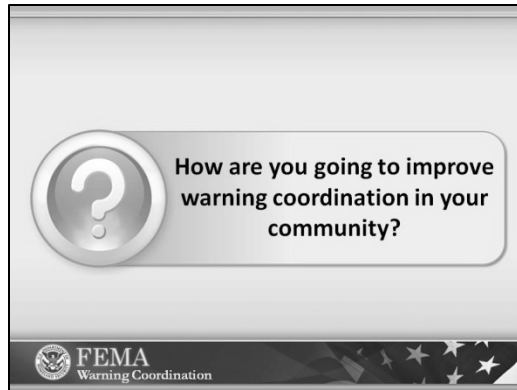


What are the different roles and responsibilities within each of the three components?



Why are members of the media important to warning coordination?





Something to think about...

What are some *specific* actions you can take immediately upon returning to your community that will help “get the ball rolling” to improve warning coordination and communication?

This course has provided the opportunity for you to understand the goals of the warning system, the components of warning messages and of the warning process, and the critical need to work with the media to communicate clearly the threat to the community.

Additionally, it has provided you with practical exercise in identifying warning coordination and communication requirements based on a threatening event and developing a strategy for working with the media to minimize the effects of conflicting information on the community.

Warning Coordination

Appendices

Student Manual

FEDERAL EMERGENCY MANAGEMENT AGENCY
EMERGENCY MANAGEMENT INSTITUTE

October 2013

G0272

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Appendix A: Glossary

Term	Definition
Advisory	Product issued by the National Weather Service for weather situations that cause significant inconveniences but do not meet warning criteria and, if caution is not exercised, could lead to life-threatening situations. Advisories are issued for significant events that are occurring, are imminent, or have a very high probability of occurrence.
AFWS	Automated Flood Warning Systems
All Hazards Emergency Message Collection Service (HazCollect)	Commonly known as HazCollect, this service provides an automated capability to streamline the creation, authentication, collection and dissemination of non-weather emergency messages in a quick and secure fashion. It is a comprehensive solution for the centralized collection and efficient distribution of Non-Weather Emergency Messages (NWEMs) to the NWS dissemination infrastructure, the Emergency Alert System (EAS) and other national systems.
America's Weather and Climate Industry	America's Weather and Climate Industry includes all elements of the private sector (including media, consultants, equipment providers, etc.) which provide services to the public in the areas of climate, water, and weather. The term does not exclude foreign-owned companies which provide services to the American public.
CMAS	Commercial Mobile Alert System
Commercial Mobile Alert System (CMAS)	A partnership between FEMA, the FCC, and wireless carriers to enhance public safety by allowing public safety authorities to use the IPAWS Open Platform for Emergency Networks to send geographically targeted, text-like Wireless Emergency Alerts (WEA) to the public. Also see Wireless Emergency Alert (WEA).
Community Rating System (CRS)	The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements.
CRS	Community Rating System

Term	Definition
DHS	Department of Homeland Security
DNR	Department of Natural Resources
DOC	Department of Commerce
DOD	Department of Defense
Doppler Radar	Radar that can measure radial velocity, the instantaneous component of motion parallel to the radar beam (i.e., toward or away from the radar antenna). Also see Dual-Polarization Radar.
DOT	Department of Transportation
Dual-Polarization Radar	New Doppler radar technology that enables the radar to sample targets both horizontally and vertically. This second dimension of target information can provide meteorologists better estimates of target type, size, and variety (e.g., rain vs. snow).
EAS	Emergency Alert System
EM	Emergency Management
Emergency Alert System (EAS)	A national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, and direct broadcast satellite (DBS) providers to provide the communications capability to the President to address the American public during a national emergency. The system also may be used by State, local, tribal, and territorial authorities to deliver important emergency information, such as AMBER alerts and weather information targeted to specific areas.
Emergency Managers Weather Information Network (EMWIN)	Commonly known as EMWIN, this suite of data access methods make available a live stream of weather and other critical emergency information. EMWIN offers an economical way to receive all products available on the NWWWS, plus graphical forecasts and select satellite data.
EMWIN	Emergency Managers Weather Information Network
EOC	Emergency Operations Center

Term	Definition
EOP	Emergency Operations Plan
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
Forecast	A statement of prediction. As used in this course, a forecast is a product issued by the NWS that provides a description of the most significant weather conditions expected during the current and following days. The exact content depends upon the intended user, such as the Public or Marine forecast audiences.
Geostationary Operational Environmental Satellite (GOES)	A satellite orbiting at 22,370 miles above the Equator with the same rotational velocity as the Earth; therefore, the satellite remains over the same location on the Earth 24 hours a day. GOES imagery is also used to estimate rainfall during the thunderstorms and hurricanes for flash flood warnings, as well as estimate snowfall accumulations and overall extent of snow cover.
GOES	Geostationary Operational Environmental Satellite
HazCollect	All Hazards Emergency Message Collection Service
Integrated Public Alert and Warning System (IPAWS)	Initiated after September 11, 2001, and directed by the Secretary of Homeland Security by Executive Order 13407, IPAWS will provide an integrated interoperable environment for alert and warning and will diversify and modernize the EAS. The goal of IPAWS is to reach all Americans, including those with disabilities or who do not have an understanding of the English language, at all times, over more communications channels, in all locations, throughout the United States during an emergency.
Integrated Warning Team	A partnership made up of Federal, State, local, tribal, and territorial emergency management officials, the NWS, and America's Weather and Climate Industry. This combination of sources must effectively communicate a consistent warning message to the public, because inconsistent warning messages lead to inaction or incorrect action by the public.

Term	Definition
iNWS	Interactive NWS, an application suite that allows users to configure and receive text message alerts and e-mail message alerts when the NWS issues a watch, warning or advisory that affects them. iNWS is intended for NWS core partners, including emergency managers, community leaders and other government agencies.
IPAWS	Integrated Public Alert and Warning System
ISO	Insurance Services Organization
Joint Polar Satellite System (JPSS)	The Joint Polar Satellite System (JPSS) is the restructured civilian portion of the National Polar-orbiting Operational Environmental Satellite System (NPOESS) that will make afternoon observations as it orbits Earth. The system includes the satellites and sensors supporting civil weather and climate measurements and a shared ground infrastructure with the Department of Defense weather satellite system.
JPSS	Joint Polar Satellite System
Meteorologist	A person who studies meteorology. Some examples include research meteorologist, climatologist, operational meteorologist, television meteorologist.
Meteorology	The study of the physics, chemistry, and dynamics of the atmosphere and the direct effects of the atmosphere upon the earth's surface, the oceans, and life in general.
National Flood Insurance Program (NFIP)	The National Flood Insurance Program (NFIP) is a Federal program created by Congress to mitigate future flood losses nationwide through sound, community-enforced building and zoning ordinances and to provide access to affordable, federally backed flood insurance protection for property owners. The NFIP is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.
NFIP	National Flood Insurance Program

Term	Definition
National Hurricane Center (NHC)	This National Weather Service center maintains a continuous watch on tropical cyclones over the Atlantic, Caribbean, Gulf of Mexico, and the Eastern Pacific from 15 May through November 30. The Center prepares and distributes hurricane watches and warnings for the general public, and also prepares and distributes marine and military advisories for other users. During the "off-season" NHC provides training for U.S. emergency managers and representatives from many other countries that are affected by tropical cyclones. NHC also conducts applied research to evaluate and improve hurricane forecasting techniques, and is involved in public awareness programs.
National Oceanic and Atmospheric Administration (NOAA)	A branch of the U.S. Department of Commerce, NOAA is the parent organization of the National Weather Service.
National Polar-orbiting Operational Environmental Satellite System (NPOESS)	The NPOESS was to be the next generation of low earth orbiting environmental satellites; to provide global coverage, monitoring environmental conditions, collecting, disseminating and processing data about the Earth's weather, atmosphere, oceans, land, and near-space environment. Replaced by the Joint Polar Satellite System (JPSS) and the Department of Defense Weather Satellite System (DWSS).
National Volcano Early Warning System (NVEWS)	A proposed national-scale plan to ensure that volcanoes are monitored at levels commensurate to their threats. The plan was developed by the U.S. Geological Survey Volcano Hazards Program (VHP) and its affiliated partners in the Consortium of U.S. Volcano Observatories (CUSVO).
National Warning System (NAWAS)	Commonly known as NAWAS, this comprehensive automated telephone network connects state and Federal warning points throughout the United States.
National Weather Service (NWS)	The official US government agency for weather, hydrologic, and climate forecasts.
NAWAS	National Warning System
NEXRAD	Next Generation Weather Radar

Term	Definition
Next Generation Weather Radar (NEXRAD)	The Next Generation Weather Radar system (NEXRAD) comprises 159 Weather Surveillance Radar-1988 Doppler (WSR-88D) sites throughout the United States and select overseas locations. This system is a joint effort of the United States Departments of Commerce (DOC), Defense (DOD), and Transportation (DOT). The controlling agencies are the National Weather Service (NWS), Air Force Weather Agency (AFWA) and Federal Aviation Administration (FAA), respectively. The system is comprised of Doppler radars, telecommunications, computer data communications, data processing hardware and software, display and data entry equipment, documentation and certain facilities and support capabilities required to detect, process, distribute, and display weather information in a manner which allows the DOC, the DOD and the DOT to fulfill their mission needs.
NHC	National Hurricane Center
NOAA	National Oceanic and Atmospheric Administration
NOAA Port	A broadcast system that provides a one-way broadcast communication of NOAA environmental data and information in near real time to NOAA and external users.
NOAA Weather Radio (NWR)	A nationwide network of radio stations broadcasting continuous weather and water information directly from the nearest forecast office. It offers continuous, 24-hour-a-day VHF broadcasts of weather observations and forecasts directly from National Weather Service offices. A special tone allows certain receivers to sound an alarm when watches or warnings are issued.
NOAA Weather Wire Service (NWWS)	A satellite data collection and dissemination system operated by NWS that provides state and federal government, commercial users, media, and private citizens with timely delivery of meteorological, hydrological, climatological, and geophysical information. As of the date of this publication, the NWWS is transitioning to the next-generation system known as the Weather Radio Improvement Project (WRIP).
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NVEWS	National Volcano Early Warning System

Term	Definition
NWR	NOAA Weather Radio
NWS	National Weather Service
NWSChat	An instant messaging program used by NWS operational personnel to share critical warning decision expertise and other types of significant weather information essential to the NWS's mission of saving lives and property. NWSChat provides direct communication between the NWS office and television meteorologists, emergency managers, Department of Natural Resources (DNR), and other specific partner organizations.
NWWS	NOAA Weather Wire Service
Outlook	A product issued by the National Weather Service, used to indicate that a hazardous weather or hydrologic event may develop. It is intended to provide information to those who need considerable lead time to prepare for the event.
Particularly Dangerous Situation (PDS)	Particularly Dangerous Situation (PDS) wording is used in rare situations when long-lived, strong and violent tornadoes are possible. This enhanced wording may also accompany severe thunderstorm watches for intense convective wind storms.
PDS	Particularly Dangerous Situation.
PETS Act	The Pets Evacuation and Transportation Standards Act of 2006
Pets Evacuation and Transportation Standards Act of 2006 (PETS Act)	This Act, which amended Section 403 of the Stafford Act, requires that household pets and service animals are included in the emergency preparedness operational plans for State and local officials following a major disaster or emergency. The Act also authorizes FEMA to provide rescue, care, shelter, and essential needs for individuals with household pets and service animals, and to the household pets and animals themselves following a major disaster or emergency.
PIO	Public Information Officer

Term	Definition
Public Information Officer (PIO)	Under the Incident Command System (ICS), a Command Staff position consisting of a single person who has responsibility for all interaction between Command and the media and who coordinates the release of information on the incident situation and response efforts from Command to the media. A Public Information Officer may designate one or more assistants from either the same or another assisting agency or jurisdiction.
SKYWARN®	SKYWARN® is a volunteer program of trained weather spotters, established by the National Weather Service. These volunteers help keep their local communities safe by providing timely and accurate reports of severe weather to NWS.
SOGs	Standard Operating Guidelines
SOPs	Standard Operating Procedures
SPC	Storm Prediction Center
Stafford Act	The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-707, signed into law November 23, 1988. This Act constitutes the statutory authority for most Federal disaster response activities especially as they pertain to FEMA and FEMA programs. The Stafford Act amended the Disaster Relief Act of 1974, PL 93-288.
StormReady	A voluntary “grass roots” program sponsored by the National Weather Service that focuses on improving communication and severe weather preparedness in communities.
TPC	Tropical Prediction Center
TsunamiReady	A voluntary “grass roots” program sponsored by NOAA that focuses on improving communication and tsunami preparedness in communities.
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey

Term	Definition
Warning	Product issued by the National Weather Service when a particular weather or flood hazard is imminent or already occurring (e.g., tornado warning, flash flood warning). A warning is used for conditions posing a threat to life or property. The term “warning” can also refer to the messages that the emergency management community uses to inform the public to initiate appropriate protective actions.
Warning Communication	Messages and statements that are transmitted from the emergency management community to the public. Warning communication needs to be tailored to the population that is being affected by the event.
Warning Coordination	Organized activity that occurs within the emergency management community to ensure that the message that is delivered is appropriate, consistent, and understandable.
Warning System	Any system, whether manual or automatic, made up of people and/or technology, designed to notify people of impending danger. The goal is to maximize the number of people who take appropriate and timely action to minimize injury, death, and property damage due to hazardous weather and flooding.
Watch	Product issued by the National Weather Service well in advance to alert the public of the possibility of a particular weather-related hazard (e.g., tornado watch, flash flood watch). The occurrence, location, and timing of the weather event may still be uncertain.
WCM	Warning Coordination Meteorologist
WEA	Wireless Emergency Alert
Weather Forecast Office (WFO)	This type of National Weather Service office is responsible for issuing advisories, warnings, statements, and short term forecasts for its county warning area.
Weather Spotters	Volunteers that support the warning process with their observational data. They are often the first to report worsening weather conditions.
WFO	Weather Forecast Office

Term	Definition
Wireless Emergency Alert (WEA)	Geographically targeted, text-like alerts used to relay Presidential, AMBER, and Imminent Threat alerts to mobile phones using cell broadcast technology. Most CMAS/WEA alerts are issued by NWS for the most imminent and severe weather conditions, such as tornado warnings. Also see Commercial Mobile Alert System (CMAS).
WSR-88D	Weather Surveillance Radar - 1988 Doppler. Also see NEXRAD.

Appendix B: Resources

NOTE: FEMA EMI has provided this list of resources to provide information related to warning coordination that may be of interest to course participants.

EMI does not guarantee that outside websites and non-government documents listed in this Appendix comply with the accessibility requirements of Section 508 of the Rehabilitation Act.

This Appendix may contain URLs that were valid when originally published but now link to sites or pages that no longer exist.

- National Weather Service Reference Guidebook
<http://www.weather.gov/om/guide/>
- Hurricane Evacuation Planning and Decision-Making
<http://www.hurrevac.com/>
- NWSChat
<https://nwschat.weather.gov/>
- Integrated Public Alert and Warning System (IPAWS)
<http://www.fema.gov/emergency/ipaws/index.shtm>
- NOAA Weather Radio
<http://www.weather.gov/nwr/>
- iNWS
<http://inws.wrh.noaa.gov/>
- EMWIN
<http://www.weather.gov/emwin/>
- HazCollect
<http://www.weather.gov/os/hazcollect/>
- StormReady
<http://www.stormready.noaa.gov/>
- TsunamiReady
<http://www.tsunamiready.noaa.gov/>
- NWS Heat Safety
<http://www.nws.noaa.gov/os/heat/index.shtml>
- SKYWARN®
<http://www.weather.gov/skywarn/>
- NOAA Weather Wire Service (NWWS)
<http://www.weather.gov/nwWS/>

- NOAA Port
<http://www.nws.noaa.gov/noaaport/html/noaaport.shtml>
- Select Social Media
<http://www.noaa.gov/socialmedia/>
- National Warning System (NAWAS)
<http://www.srh.noaa.gov/cwwd/fags/nawas.htm>
- Best Practices for Outdoor Warning Sirens
<http://skywatch.org/ows.pdf> [610 KB]
- NWS Advanced Hydrologic Prediction Service (AHPS)
<http://water.weather.gov/ahps>

Related Training

- SKYWARN® Spotter Training
https://www.meted.ucar.edu/training_course.php?id=23
- IS-247 *Integrated Public Alert and Warning System (IPAWS)*
<http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-247.a>
- IS-271 *Anticipating Hazardous Weather & Community Risk*
<http://training.fema.gov/EMIWeb/IS/is271a.asp>
- G365 *Partnerships for Creating and Maintaining Spotter Groups.*
<http://training.fema.gov/stcourses/>
Check with State Training Agency for availability
- G271 *Hazardous Weather and Flooding Preparedness*
<http://training.fema.gov/stcourses/>
Check with State Training Agency for availability

Case Studies

- Mother's Day Tornado Outbreak, 2008
<http://www.srh.noaa.gov/ffc/?n=momsdaytor08>
http://www.nws.noaa.gov/om/assessments/pdfs/mothers_day09.pdf [1.93 MB]
- Caledonia High School, Mississippi StormReady Success, 2008
http://www.srh.noaa.gov/media/ian/Newsletter/newsletter_spring08.pdf [384 KB]
- Van Wert County, Ohio StormReady Success, 2002
<http://www.stormready.noaa.gov/vanwert.htm>
- Roanoke, Illinois StormReady Success, 2004
<http://www.crh.noaa.gov/ilx/events/jul132004/jul13.php>
- Palm Sunday Tornado Event, 1994
<http://www.srh.noaa.gov/bmx/?n=palmsunday94stormdata>
- West Virginia Flash Flooding Event, 1990
<http://www.erh.noaa.gov/er/iln/shadyside.html>