

G0272: Warning Coordination

Student Manual

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FEMA

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Unit 1: Introduction and Course Overview

Unit Objectives

Because this is an introductory unit, there are no learning objectives presented. The purpose of this unit is to introduce participants to the course and provide an overview of what to expect in the additional units.

Visual 1: Warning Coordination



G0272 Warning Coordination Key Pts

Introduction

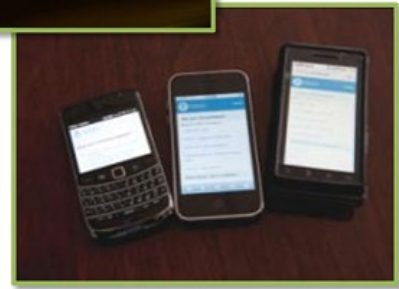
About the Student Manual There is added space on the right side of the page for you to take notes. Large bold text on this side of the page indicates the beginning of a new unit. Occasionally, special notes will be inserted on this side of the page.

Visual 2: Unit 1

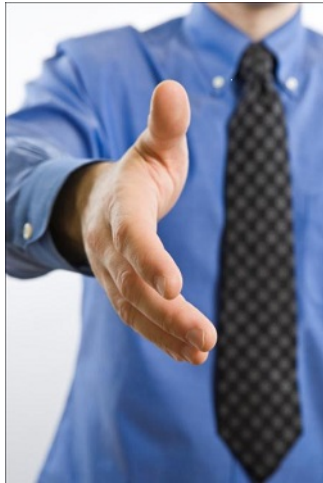
Introduction and Course Overview

Visual 3: Administrative Information

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



Visual 4: Introductions



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

Introductions Key Pts

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.

Visual 5: Course Background

Course Background

Visual 6: The Need for Warning Messages Slide

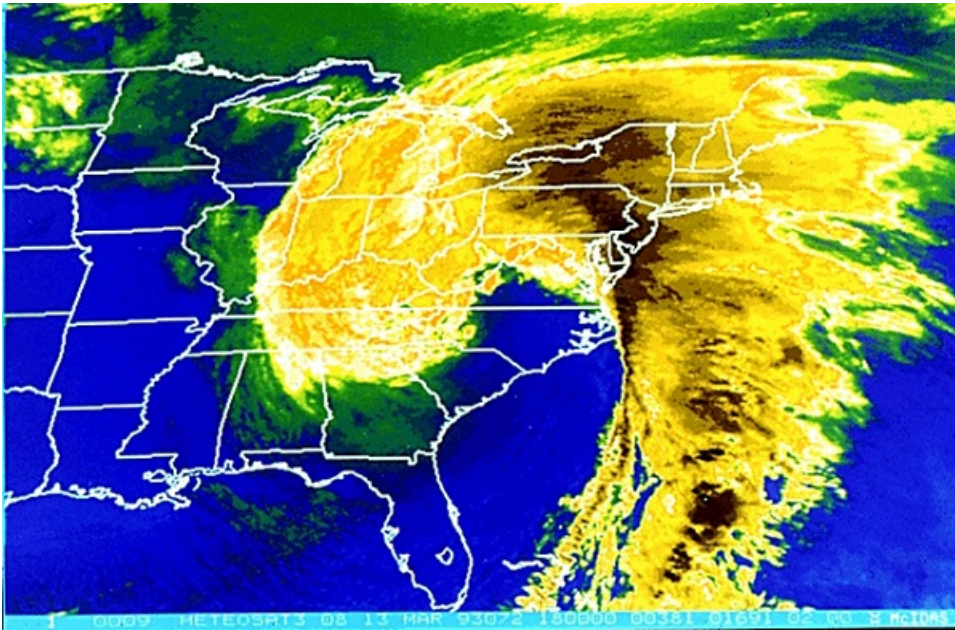
- Severe weather and flooding kills or injures hundreds of people in the U.S. each year
- Property damage each year costs tens of billions of dollars to communities
- During effective warning coordination danger is communicated and understood

The Need for Warning Messages Key Pts

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.

Visual 7: How do we use radar / satellite information?



Visual 8: How do we effectively communicate as emergency managers?



Visual 9: How do we warn for flash floods?



Visual 10: How do we warn for winter storms?



Visual 11: How do we work with the media?



Visual 12: How do we warn in a timely manner?



How do we warn in a timely manner? Key Pts

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.

Visual 13: Course Overview

Course Overview

Visual 14: The Importance of Warning Coordination

- Warning Coordination can save lives and property
- Warning programs depend on effective coordination and communication with:
 - National Weather Service
 - Local Officials
 - State Officials
 - News Media



Visual 15: Course Objectives (1 of 2) Slide

- 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

Course Objectives (1 of 2) Key Pts

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.

Visual 16: Course Objectives (2 of 2) Slide

- 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

Course Objectives (2 of 2) Key Pts

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.

Visual 17: Course Outline Slide

1. Introduction and Course Overview
2. The Social Dimensions of Warning Response
3. Warning Messages
4. Developing an Effective Community Warning Process
5. Implementing and Maintaining a StormReady or TsunamiReady Program
6. Warning Exercises
7. The Integrated Warning Team
8. Final Exercise and Summary

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	
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.

Unit	
	<ul style="list-style-type: none">• 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.

Visual 18: Materials

- Student Manual
- Appendices
 - A: Glossary
 - B: Resources
- Local Warning Annexes



Materials Key Pts

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

Visual 19: Questions?



Questions? Key Pts

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

Unit 2: The Social Dimensions of Warning Response

Visual 1: Unit 2: Slide

Unit 2:

The Social Dimensions of Warning Response

Visual 2: Objectives

- 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.

Objectives Key Pts

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.

Visual 3: Overview of Warning Systems

Overview of Warning Systems

Visual 4: Warning System Goal



Appropriate and timely action to minimize injury, death, and property damage

Visual 5: Integrated Public Alert and Warning



Timely alert and warning system to the American people for the preservation of life and property

Integrated Public Alert and Warning System

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.

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.

Visual 6: What are warning messages?

What are warning messages?

What are warning messages? Key Pts

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

From Emergency Managers

From the National Weather Service

Visual 7: Warnings

- Public information messages from Emergency Management
- NWS severe weather/flooding event products



Visual 8: What is the difference between warning coordination and communication?

What is the difference between warning coordination and communication? Key Pts

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

Warning Coordination

Warning Communication

Visual 9: Warning Coordination vs. Communication

Coordination
Within emergency
management
community



Communication
From emergency
management public

Visual 10: What are some products provided by the National Weather Service for hazardous weather and flooding events?

What are some products provided by the National Weather Service for hazardous weather and flooding events? Key Pts

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

NWS Product _____

NWS Product _____

Visual 11: NWS Products

- Outlook
 - A hazardous weather or flood event may occur
 - Provides information for preparation
- Watch
 - The risk of an event has increased
 - Occurrence, location, and/or timing remain uncertain
- Advisory
 - A less serious event is occurring or imminent
 - Conditions may cause significant inconvenience
- Warning
 - An event is occurring or imminent
 - Conditions pose a real threat to life or property

Visual 12: Public Response:

A Complex Social Process

Visual 13: Primary Factors Influencing Response

- Previous experiences
- Observations
- Level of community interaction
- Perception of risk/proximity
- Length of residency



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.

Visual 14: Primary Factors Influencing Response



- Family network
- Children
- Pets

Family Composition

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.

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.

Visual 15: How could you expect your community to respond?

Visual 16: Given your community's hazards and history, how do you think your residents process warnings?

Visual 17: What other factors do you think influence how people receive weather warnings?

Visual 18: Additional Response Factors

- Age
- Language
- Other access and functional needs
- Time of day
- Type of community
- Level of individual preparedness



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.

Visual 19: Warning Myths

Visual 20: Myth 1

Myth: People panic in response to warnings.

Truth: People DO NOT panic in response to warnings. People do not go running wildly through the streets when they hear a warning. Rather, they seek additional information to make a response decision.

Visual 21: Myth 2

Myth: If you "Cry Wolf" with false alarm warnings, the public will tune you out

Truth: People will forgive some over-warning if the reasons for false alarms are well-explained and understood

Visual 22: Myth 3

Myth: An effective warning message is a simple one, with as little detail as possible

Truth: The "KISS" principle does not apply for public warnings

Visual 23: Myth 4 Slide

Myth: People remember what the sounding of various siren signals mean

Truth: The best use of outdoor warning sirens is to alert people to immediately seek additional information about an imminent threat

Visual 24: Unit Summary Slide

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

Unit 3: Warning Messages

Visual 1: Unit 3: Warning Messages

Visual 2: Objectives Slide

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

Visual 3: Effective Warning Messages

Visual 4: Inconsistent Warnings Cause...

- Delayed decision making
- Dismissed warnings
- Wrong action
- No action



Visual 5: Characteristics of Effective Warning Messages

- Consistent content
- Timeliness
- Specific information

Visual 6: What information should be included in warnings?

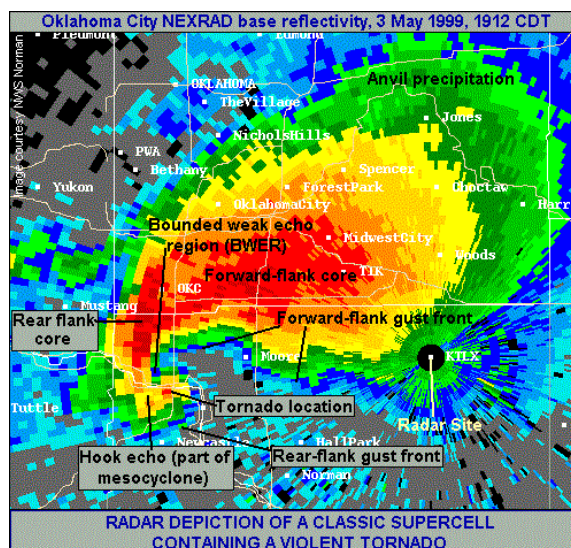
What information should be included in warnings? Key Pts

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

Your Notes:

Visual 7: Components of Warnings

- Specific hazards
- Location
- Magnitude
- Likelihood
- Timeframes
- Warning source
- Protective actions



Visual 8: What are some examples of protective actions to include in a warning message?

What are some examples of protective actions to include in a warning message?

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

Your Notes:

Visual 9: Some Protective Actions

- Evacuating
- Taking shelter/cover
- Avoiding flooded roads
- Keeping supplies in car
- Stocking up on extra supplies
- Checking on the elderly



Visual 10: Develop a Warning Message



Visual 11: Activity Instructions

- Work with your group
- Refer to instructions in Student Manual
- Develop a warning message for the scenario
- Be prepared to share with the class



Activity Instructions Key Pts

Small Group Activity: Develop a Warning Message

Activity Instructions

- Work with your group
- Refer to instructions in Student Manual
- Develop a warning message for the scenario
- Be prepared to share with the class
- As directed by your instructor, complete the activity on the following pages.

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

Visual 12: Unit Summary Slide

Warning Message Characteristics

- Consistent content
- Timeliness
- Specific information

Warning Message Components

- Specific hazard(s)
- Location
- Magnitude
- Likelihood
- Timeframe
- Source of warning
- Protective actions

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.

Something to think about... What did you learn in this unit that can help you improve warning coordination in your community?

Unit 4: Developing an Effective Community Warning Process

Visual 1: Unit 4: Developing an Effective Community Warning Process

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.

Visual 2: Objectives 2 Slide

- 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

Visual 3: Overview of the Integrated Warning Process

Visual 4: Integrated Warning Process

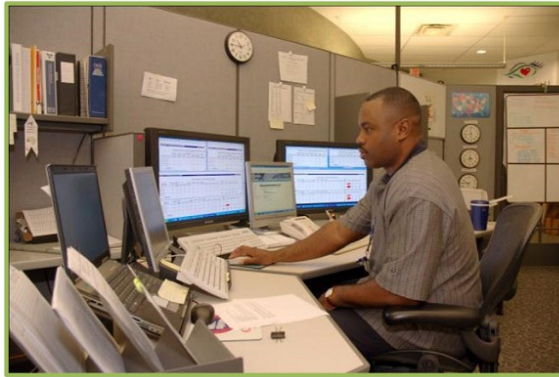


The warning process is composed of a series of interlocking sets of activities that work together for an effective community warning system. These three activities, or components, are:

- Monitoring and detection
- Impact assessment
- Public response.

Visual 5: Monitoring and Detection

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



Visual 6: How might local agencies monitor the weather?

Visual 7: How do spotters fit into the process?

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*.

Visual 8: Impact Assessment

- Interpretation
- Decision to warn
- Method and content of warning

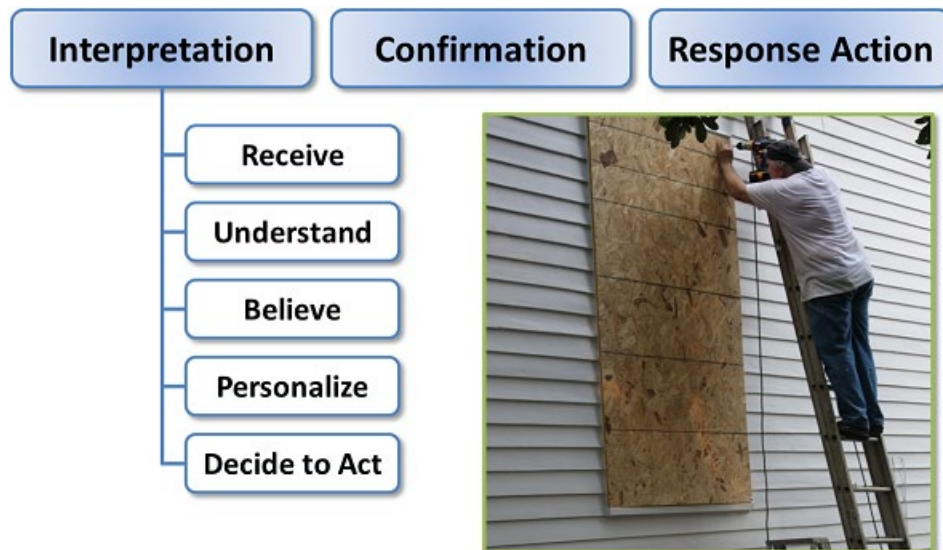


Visual 9: What are some technologies for communicating weather and flood warnings?

Something to think about...

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

Visual 10: Public Response



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.

Visual 11: Integrated Public Alert and Warning System (IPAWS)

Mission:

Provide integrated services and capabilities to local, state, and federal authorities that enable them to alert and warn their respective communities via multiple communications methods



Integrated Public Alert and Warning System (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.

Want to know more? The IPAWS video can be found at: <https://www.fema.gov/media-library/assets/videos/77356>.

IPAWS Video Transcript

When disasters strike, whether they are natural, accidental, or man-made, it has always been vital that they be reported accurately and in a timely fashion to those who may be in danger.

It is the policy of the United States to have an effective, reliable, integrated, flexible, and comprehensive system to alert and warn the American people.

The Integrated Public Alert and Warning System, or IPAWS, is the solution for effective public alerts and warnings

IPAWS allows alerting authorities to write their own message using open standards. The message is then authenticated by the IPAWS Open Platform for Emergency Networks -- or OPEN-- to be delivered simultaneously through multiple pathways. Reaching as many people as possible to save lives and protect property.

IPAWS must ensure the President can reach the American people, but it recognizes that most alerts and warnings are issued at a state and local level.

IPAWS alerts and warnings are location specific and therefore more relevant to those receiving the alert, and through the use of open standards such as Common Alert Protocol, IPAWS allows for growth and integration with future consumer technologies.

How do alerting authorities send an alert or warning to IPAWS OPEN?

In addition to the President, alerting authorities include State, local, territorial, and tribal public safety officials who are designated within their level of government as an authority responsible for communicating emergency alerts and warnings to the public.

After completing FEMA-sponsored training, alerting authorities will be authenticated for access to IPAWS.

They will then be able to use Common Alerting Protocol compliant emergency and incident management tools to create location specific alerts that are scaled to cover areas as big as their entire jurisdiction or a much smaller area within their jurisdiction.

Once created, the alert will then be sent to IPAWS OPEN.

How is an alert routed by IPAWS OPEN?

Once the alert is received from the alerting authorities, IPAWS OPEN authenticates the source, and validates that the alert input conforms to the Common Alerting Protocol standard and IPAWS profile. This provides a standard for everyone across all levels of government as well as the private sector.

While older systems relied on audio and text-only systems, IPAWS OPEN makes picture and video feeds possible, and allows for the seamless incorporation of emerging technologies.

Once the alert message has been authenticated by IPAWS OPEN, the message is simultaneously delivered to all IPAWS-compliant public alerting systems.

Emergency alerts will be delivered across multiple pathways to the American people.

Alerts will be delivered by the Emergency Alert System, using AM, FM, and satellite radio as well as broadcast, cable, and satellite TV.

The Commercial Mobile Alert System will send alerts to cell phones and other commercial mobile network devices, based on their location, even if cellular networks are overloaded and can no longer support calls, text, and emails.

The National Oceanic and Atmospheric Administration will deliver alerts through the National Weather Service all hazards radio.

Alerts will be available on the internet through web based applications, such as Email, Instant Messaging and RSS feeds in any web browser.

State, local, territorial, and tribal alerting systems such as emergency telephone networks, giant voice sirens, and digital road signs may also receive alerts from IPAWS OPEN, and future alerting technologies and systems can easily be integrated into IPAWS.

When disaster strikes, IPAWS allows emergency managers and alerting authorities at all levels to send one message across multiple pathways, to save lives and protect property.

No matter where you are. At home, at school, at work, or even on vacation, you can get life-saving alerts.

IPAWS.....Emergency Alerts at the Speed of Life.

Get alerts...stay alive.

Visual 12: IPAWS Key Features Slide

- Allows the President to speak to Americans under all emergency situations
- Enables all levels of emergency communication officials to access multiple broadcast pathways
- Alerts those with disabilities and those without an understanding of the English language
- Diversifies and modernizes the Emergency Alert System

IPAWS Key Features

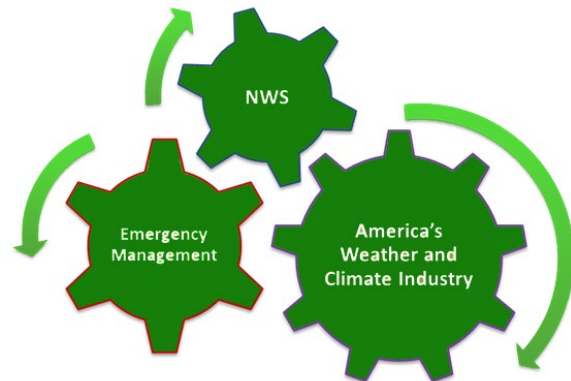
IPAWS will allow the President of the United States to speak to the American people under all emergency circumstances. It will also enable federal, state, territorial, tribal, and local emergency communication officials to access multiple broadcast pathways to create and activate alert and warning messages. 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.

Visual 13: Roles and Responsibilities of the Integrated Warning Team

Visual 14: Integrated Warning Team

Partners share information and coordinate warnings to:

- Provide a consistent warning message
- Motivate those at risk to take timely and appropriate action



Integrated Warning Team

- NWS
- Emergency Management
- America's Weather and Climate Industry

Partners share information and coordinate warnings to:

- Provide a consistent warning message
- Motivate those at risk to take timely and appropriate action

Visual 15: Role of NWS during Monitoring and Detection

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

Photo Credit: NOAA



Role of NWS during Monitoring and Detection

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

Visual 16: What communication tools do you use to coordinate with your local NWS office?

Visual 17: NWS Role during Impact Assessment

- Interpretation
- Decision to warn
- Warning method and content



URGENT - WINTER WEATHER MESSAGE
NATIONAL WEATHER SERVICE MISSOULA MT
434 PM MST WED DEC 8 2010

IDZ006-091200-
/O.CON.KMSO.WS.W.0033.101210T00002-101211T0600Z/
SOUTHERN CLEARWATER MOUNTAINS-
334 PM PST WED DEC 8 2010

...WINTER STORM WARNING REMAINS IN EFFECT FROM 4 PM THURSDAY TO
10 PM PST FRIDAY ABOVE 3000 FEET...

A WINTER STORM WARNING ABOVE 3000 FEET REMAINS IN EFFECT FROM
4 PM THURSDAY TO 10 PM PST FRIDAY.

* IMPACTS/TIMING: A STRONG WINTER STORM WILL BRING ACCUMULATING
SNOW BEGINNING EARLY THURSDAY AFTERNOON THROUGH FRIDAY
EVENING. ROADWAYS WILL BECOME SNOW COVERED MAKING FOR
DIFFICULT TRAVEL.

* SNOW ACCUMULATIONS: 5 TO 9 INCHES ABOVE 3000 FEET...LOCALLY UP
TO 18 INCHES OVER LOLO PASS BY LATE FRIDAY EVENING. LOWER
ELEVATIONS BELOW 3000 FEET...1 TO 3 INCHES.

* LOCATIONS IMPACTED INCLUDE...DIXIE...ELK CITY...HIGHWAY 12
LOWELL TO LOLO PASS

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Visual 18: Role of the NWS during Public Response

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



Role of NWS Key Pts

Role of NWS during Public Response

Monitoring actions of:

- Public
- Media
- Emergency Manager

Seeking feedback about:

- Products
- Areas for improvement

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.

Visual 19: If the NWS issues warnings, why would the emergency manager issue weather or flood messages?

Visual 20: Role of Emergency Management during Monitoring and Detection

- Monitoring conditions
- Coordinating with NWS to activate weather spotters
- Communicating conditions to NWS



Role of Emergency Management during Monitoring and Detection

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.

Visual 21: 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



Role of Emergency Management during Impact Assessment

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**

Visual 22: Who makes the decision to warn and communicate the warning in your community?

Visual 23: Role of Emergency Management during Public Response

Determining:

- How public is interpreting information
- Information being disseminated through other channels
- Additional information that may be needed
- If appropriate actions are being taken

Role of Emergency Management during Public Response

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.

Visual 24: America's Weather and Climate Industry

- Local television meteorologists
- Consulting firms
- Private companies
 - The Weather Channel
 - AccuWeather
 - WeatherBug
 - Etc.

Visual 25: Role of America's Weather and Climate Industry during Monitoring and Detection

- Some news media have:
 - Degreed/certified meteorologists
 - Radars
 - Weather spotter networks
 - Storm chasers



Visual 26: How do you work with America's Weather and Climate Industry in your warning process?

Visual 27: Role of America's Weather and Climate Industry during Impact Assessment

- Disseminate warnings in a timely manner
- Accurately identify warning source



Photo Credit: NASA

Role of America's Weather and Climate Industry during Impact Assessment



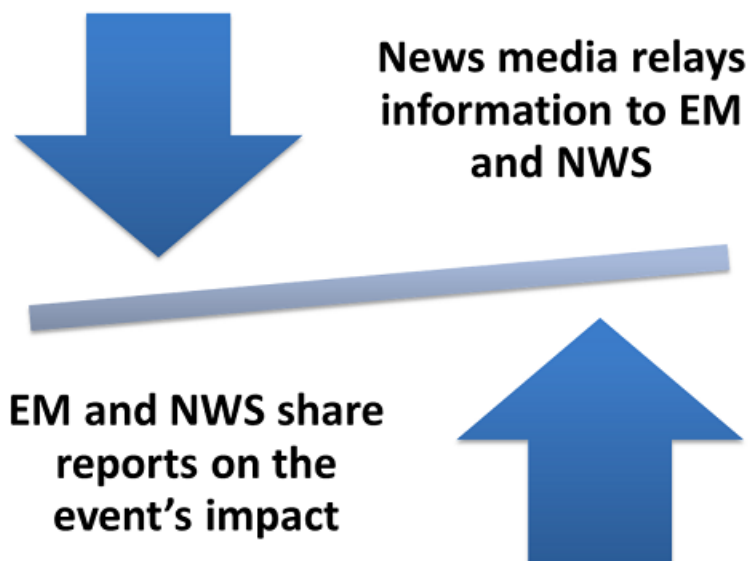
Instructor Note

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.

The media have a critical role in alerting the public to the potential for hazardous weather and flooding several days to several weeks prior to impact.

From this standpoint, the media are critical, because without them, warnings would not get out. If your operation has a Public Information Officer, he or she can help you coordinate with the news media.

Visual 28: Role of America's Weather and Climate Industry during Public Response



Role of America's Weather and Climate Industry during Public Response

News media relays information to emergency management and NWS, while emergency management and NWS share reports on the event's impact

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.

Visual 29: Does the public have a responsibility to assist in the warning process?

Visual 30: Storm Watch Video

Storm Watch Video

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

Storm Watch Video Transcription

Major support for Storm watch was provided by the Meadows Foundation and was produced as a joint venture between the National Weather Service.

[Storm noise]

.and the Texas Sever Storms Association.

[announcer] The following is a north Texas sever weather outlook issued by the National Weather Service forecast office in Forth Worth at 6:25 a.m. There's a high risk of severe thunderstorms this afternoon and tonight for the extreme northern part of north Texas, generally north of the line rom Texarkana to Denton to Haskell. There's a slight risk of severe thunderstorms for the remainder of north Texas including all locations north of the Brady-Belton-Temple line. An intensely strong upper-level disturbance will move across north Texas today, and as it does, strong to severe thunderstorms will develop in the unstable air mass which is already in place.

Due to the pronounced turning of winds with height, especially over the high risk area, and a significant dry air intrusion supercell thunderstorms are likely to form. Some of these could produce strong tornados. Emergency management officials and storm spotters across the western and central parts of north Texas should be ready for possible activation this afternoon. Stay tuned to NOAA Weather Radio for additional information concerning this potentially dangerous weather situation.

[printer noise] [phone rings]

[storm spotter] Hello, this is Sam.

[caller at Dallas County Emergency Operations Center] San it looks like it may be a rough one today

[spotter] Yeah I know. I heard the early morning outlook. I think I'll wait till the Watch is issued and take off then.

[caller] Good, we may need everyone on this one. I'll be in the EOC all day if you need me. OK fine.

[printer noise and music]

[alert beep]

[announcer] in these areas. Remember, a Tornado Watch means conditions are favorable for tornados and Sever Thunderstorms in and near the watch area. Stay tuned to NOAA Weather Radio for later statements ad possible warnings.

[storm spotter, over radio] This is K5KJ. Go ahead, weather service.

[NWS] Sam, things are heating up here. The radar indicates circulation over BenBrook. The weather Service is issuing a tornado warning for Tarrant County.

[spotter] Ok I/n heading that way. This is K5KJ.

[NWS, over radio] Roger, K5KJ. Dallas EOC, do you copy?

[Dallas EOC, over radio] Dallas EOC copies.

[NWS meteorologist] There's definitely strong rotation in that storm, but it's difficult to interpret the data because it's so close to the radar site [fades]

[spotter, over radio] Weather service, this is K5KJ. I'm in the Edgecliff area and can see the storm clearly. There's a definite wall cloud and rotation debris underneath it.

[music, printer noise]

[announcer] this is a Severe Weather Statement. At 9:02 p.m., a tornado was reported on the ground near Cedar Hill. This was verified by amateur radio spotters.

[meteorologist] the storm's just west of Lancaster, moving east at 30.

[spotter, over radio] Weather service, this is K5KJ

[NWS] This is WD5-FLQ National Weather Service. Go ahead, K5KJ.

[spotter] I'm near Lancaster and I can see transformers exploding in this area.

[NWS] Roger, K5KJ Dallas EOC, do you copy?

[Dallas EOC] EOC copies. Net be advised. Lancaster EOC has activated their sirens.

[music]

[Child] Mom, there's something out there. [mother] Doug! Get away from that door! The weather radio says there's a tornado coming. Now get in the hall closet. [child] But Mom [mother] Hurry

[storm noise] [spotter] This is K5KJ. An apparent tornado is moving into Lancaster.

[NWS] Roger K5KJ [over radio] Break [NWS] All stations stand by. Station break identify, and go ahead.

KB5 Young Bravo Charlie, I'm at 35 and Ovilla, I'm in the house. I can verify tornado on the ground. I've got broken windows all around me. We're stuck in a hall. Multiple, multiple damage windows still breaking.

[weather radio] If no basement is available, seek shelter in an interior room such as a closet on the lowest floor.

Visual 31: What is going on in the video?

Visual 32: Is the forecaster's job complete?

Visual 33: Who activated the spotter?

Visual 34: Unit Summary

- Warning Process
 - Monitoring and detection
 - Impact assessment
 - Public response
- Integrated Warning Team
 - National Weather Service
 - Emergency Management
 - America's Weather and Climate Industry

Unit Summary

Something to think about... What did you learn in this unit that can help you improve warning coordination in your community?

Unit 5: Implementing and Maintaining a StormReady or TsunamiReady Program

Visual 1: Unit 5: Implementing and Maintaining a StormReady or TsunamiReady Program

Visual 2: Objectives

- 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

Objectives

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.

Visual 3: 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.

Visual 4: StormReady History

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



Visual 5: TsunamiReady History

- Began in 2001
- Extrapolation of StormReady
- Implemented a planning system for tsunamis



TsunamiReady History

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.

Did you know?

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

Visual 6: Incentives

- Improve warning timeliness and dissemination
- Justify program costs
- Provide "Image Incentive" for the community
- Lower National Flood Insurance Plan premiums



Incentives

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.

Visual 7: How Being StormReady Saves Lives



Photo Credit: The ArkLaMiss Observer, Spring 2008 Edition, NOAA/NWS

How Being StormReady Saves Lives

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.

Visual 8: How Does a Community Become StormReady or TsunamiReady?

Visual 9: Recognition Requirements

- Establish 24-hour warning point and EOC
- Receive and disseminate warnings in several ways
- Monitor weather conditions locally
- Promote public readiness
- Develop hazardous weather plan

Recognition Requirements

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).

Visual 10: Recognition Process



Recognition Process

So how does a community get recognized as StormReady/TsunamiReady? The basic process is listed below:

1. The community contacts the local NWS forecast office (Warning Coordination Meteorologist) 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 works with the community to implement necessary changes.
5. Once all criteria are met, a recognition ceremony is held for the community.

Visual 11: What Recognized Communities Receive

- 3-year recognition from NWS
- Official signs
- Authorized use of logo
- Listing on national website
- Possible NFIP rate adjustments



What Recognized Communities Receive

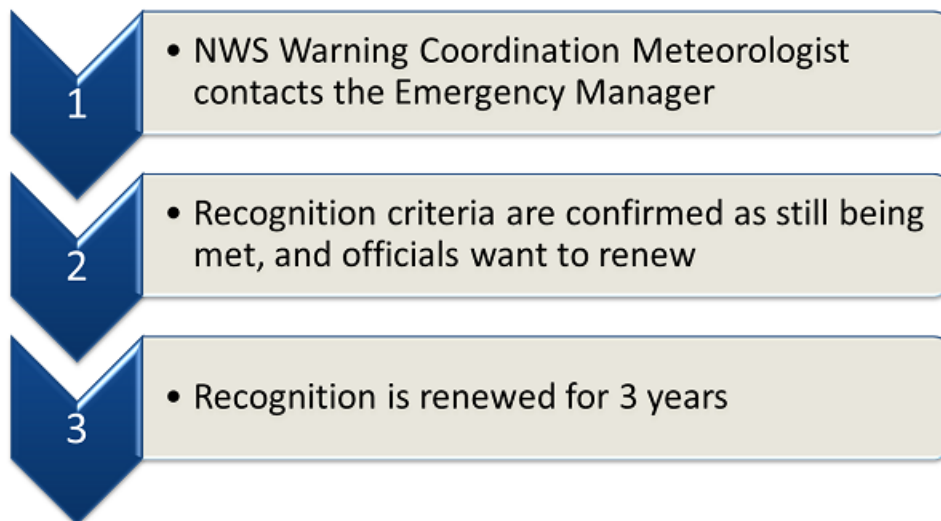
Successful applicants receive a StormReady/TsunamiReady recognition letter, official signs and logo usage, and a listing on the national website. In addition, StormReady jurisdictions can forward a copy of their recognition letter to their Insurance Services Organization (ISO)/Community Rating System (CRS) Specialist for details on possible flood insurance rate adjustments.

Want to know more?

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

Visual 12: Maintaining StormReady or TsunamiReady Recognition

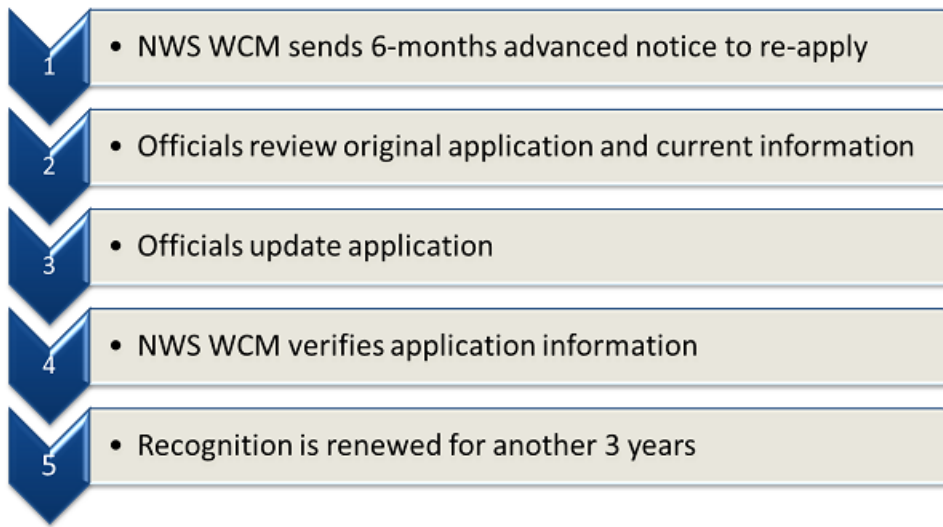
Visual 13: Renewal Process After 3 Years



Renewal Process after 3 years

1. NWS Warning Coordination Meteorologist contacts the EM
2. Recognition criteria are confirmed as still being met, and officials want to renew
3. Recognition is renewed for 3 years

Visual 14: Renewal Process After 6 Years



Renewal Process After 6 Years

After the first six years, the renewal process is as follows:

1. The NWS WCM should send a notification to communities that they need to re-apply with 6 months advanced notice.
2. The notification should include a copy of the original application and a request that local officials review the application to certify that it is still accurate.
3. A community official should provide an updated list of any new technology or information that has been added since the initial application was signed.
4. NWS WCM verifies application information.
5. Once a community official signs the application and returns it to the NWS local office, another three-year recognition period becomes effective.

Visual 15: Van Wert County, Ohio



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.

Visual 16: Roanoke, Illinois



Roanoke, Illinois

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.

Visual 17: Unit Summary

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



Unit Summary

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.

Something to think about... What did you learn in this unit that can help you improve severe weather preparedness in your community?

Unit 6: Warning Exercises

Visual 1: Unit 6: Warning Exercises

Unit 6: Warning Exercises

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.

Visual 2: Objectives

- Identify where warning coordination breakdowns have occurred, based on scenario information
- Analyze a community's warning processes to identify potential breakdowns in coordination and communication

Visual 3: Warning Coordination



Warning Coordination

Visual 4: Instructions

- Work with your group
- Refer to instructions in Student Manual
- Read scenarios and answer questions
- Be prepared to share your responses
- You will have 15-20 minutes



Instructions

- Work with your group
- Refer to instructions in Student Manual
- Read scenarios and answer questions
- Be prepared to share your responses
- You will have 15-20 minutes
- 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 #2 Questions

Father's Day Tornado Outbreak

1. Where do you think the breakdown in disseminating the warning occurred?
2. What additional measures might have been taken to avoid this situation? By whom?
3. What, if anything, could the local emergency manager and/or the media do to help prevent a similar situation from occurring in the future?

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 #3 Questions

Hurricane Havoc

1. What additional measures might have been taken to avoid this situation?
2. What steps could state and local officials take to prevent a similar situation from occurring in the future?

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?

Visual 5: Analyze Current Warning Processes



Analyze Current Warning Process

Visual 6: Instructions

- Work with your group
- Refer to instructions in Student Manual
- You will have 20 minutes



Instructions

- Work with your group
- Refer to instructions in Student Manual
- You will have 20 minutes

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: a. Tasks or functions that the group thinks work well, and some basic reasons for their success b. 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.

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.

Instructions Continued

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:

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 - Methods and warning devices used to warn the public.
 - Types and locations of warning devices and their geographic coverage.
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- **Authorities and References.** Lists authorities and references that pertain to the Warning function.

Visual 7: How is the warning decision made in your jurisdiction?

Visual 8: Who is empowered to make the warning decision?

Visual 9: How is decision making coordinated with other jurisdictions?

Visual 10: How long does it take to make the decision to warn and to communicate the warning?

Visual 11: What could be done to make this process faster?

Visual 12: Unit Summary

How is the warning decision made in your jurisdiction?

Who is empowered to make the warning decision?

How is decision making coordinated with other jurisdictions?

How long does it take to make the decision to warn and to communicate the warning?

What could be done to make this process faster?

Something to think about...

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

Unit 7: The Integrated Warning Team

Visual 1: Unit 7: The Integrated Warning Team

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.

Visual 2: Objectives (1 of 2)

- Identify the local media agencies who 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

Visual 3: Objectives (2 of 2)

- Describe methods for developing effective partnerships with members of the media
- Develop strategies for focusing warning messages to the intended method of dissemination

Visual 4: Overview of the Integrated Warning Team

Visual 5: Members of the Integrated Warning Team

- Emergency Management Officials
- National Weather Service
- America's Weather and Climate Industry



Members of Integrated Warning Team

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.

Something to think about... Do you know who the local media contacts are in your community?

Visual 6: Principles of the Integrated Warning Team

Partners must:

- Have the same understanding of hazards and risks
- Share information among agencies and organizations
- Communicate a consistent set of warning messages

Partnership Principles

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.

Visual 7: Strategies for Working with the Media

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.

Visual 8: Challenges to Overcome

- Time
- Money
- Capability
- Turnover



Challenges to Overcome

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.

Visual 9: Strategies for Working With the Media

Visit station managers and newspaper editors

- Ask what they need from you
- Solicit their advice, assistance, and suggestions

Strategies for Working with the Media

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.

Visual 10: Work Together to Educate the Public

- Likely hazards in the community
- Weather terminology (e.g., floodplain, flash flood, warning)
- Protective actions
- How watches and warnings are issued
- What to do when the warning siren sounds
- How to get additional emergency information

Visual 11: Methods to Communicate Warnings



Methods to Communicate Warnings

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.

Visual 12: What ideas do you have for improving coordination with the media?

Visual 13: Panel Discussion

Visual 14: Instructions

- Work with your group
- Develop strategies for focusing warning messages
 - For a specific hazard
 - For a specific media type
- Refer to instructions in the Student Manual
- Be prepared to discuss your rationale
- You have 10 minutes



Instructions

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.

Visual 15: Focusing Warnings to the Media



Focusing Warnings to the Media

Focusing Warnings to the Media

Purpose: This activity 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 activity:

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.

Visual 16: Unit Summary

What are unique issues when working with the members of the television media?

What are unique issues when working with the members of the radio media?

What are unique issues when working with the members of the internet/print media?

Something to think about...

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

Visual 17: What are unique issues when working with the members of the television media?

Visual 18: What are unique issues when working with the members of the radio media?

Visual 19: What are unique issues when working with the members of the internet/print media?

What are unique issues when working with the members of the internet/print media?

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.

Unit 8: Final Exercise and Summary

Visual 1: Unit 8: Final Exercise and Summary

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.

Visual 2: Objectives 5 Slide

- 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

Visual 3: Final Exercise



Final Exercise

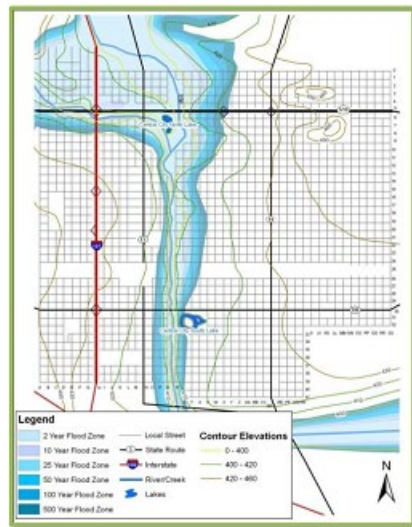
Final Exercise

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.

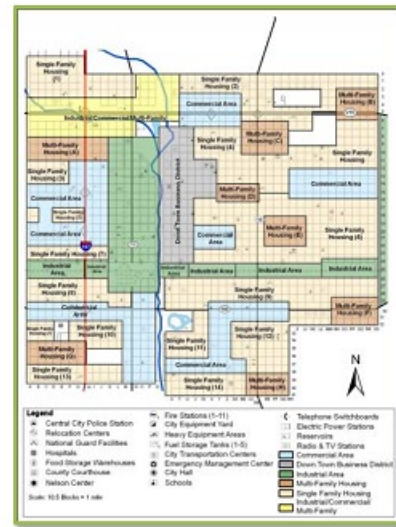
Visual 4: Background: Central City

- In rural coastal county
- Moderate flooding at least once a year
- Major flooding generally once every 5 years
- Many activities and industry along riverfront

Visual 5: Central City Maps



Flood Zone Map



Land Use Map

Central City Maps Key Pts

Central City Maps

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.

Visual 6: Instructions

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



Visual 7: Monday Morning. Slide

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

Monday Morning. Key Pts

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 Hydro meteorological 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

- Working with your group, review the scenario information carefully and discuss the question listed below.
- Refer to other materials used during this course as you determine your response.
- Record your group's response.
- 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?

Visual 8: Tuesday Morning. Slide

- Flood watch issued
- Rain to begin Wednesday and continue
- Rainfall totals can approach 12-14 inches over the next 3 days
- Conflicting media reports

Visual 9: Wednesday Morning. Slide

- Hazardous Weather Update calls for rain over the next 12 hours
- Flood Watch still in effect
- Flood Warning may be issued later if rain continues

Visual 10: Wednesday Evening. Slide

- Flood Warning issued
- Rainfall totals up to 14 inches expected over the next few days
- River stage is at 27 feet and rising
- River expected to reach flood stage by Thursday afternoon

Visual 11: Exercise Debrief

- Select spokesperson for each group
- Present responses to scenario and updates
- Provide rationale for decisions

Visual 12: Course Summary

Visual 13: What is the goal of the warning system?

Visual 14: What are the three main components of an integrated warning process?

Visual 15: What are the different roles and responsibilities within each of the three components?

Visual 16: Why are members of the media important to warning coordination?

Visual 17: How are you going to improve warning coordination in your community?

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.

Visual 18: Final Exam

Visual 19: Certificates

Certificates

Appendices

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
DHS	Department of Homeland Security

Term	Definition
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 NWS, plus graphical forecasts and select satellite data.
EMWIN	Emergency Managers Weather Information Network

Term	Definition
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

Term	Definition
	messages lead to inaction or incorrect action by the public.
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
Next Generation	The Next Generation Weather Radar system (NEXRAD) comprises 159

Term	Definition
Weather Radar (NEXRAD)	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
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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
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

Term	Definition
	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

Term	Definition
	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
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

Term	Definition
	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.

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.

[NWS Products and Services Reference Guidebook](https://www.weather.gov/publications/nws_guide)

https://www.weather.gov/publications/nws_guide

[Hurricane Evacuation Storm Tracking and Decision Support Tool](http://www.hurrevac.com/) <http://www.hurrevac.com/>

[NWSChat](https://nwschat.weather.gov/) <https://nwschat.weather.gov/>

[Integrated Public Alert and Warning System \(IPAWS\)](https://www.fema.gov/integrated-public-alert-warning-system) <https://www.fema.gov/integrated-public-alert-warning-system>

[NOAA Weather Radio All Hazards](http://www.nws.noaa.gov/nwr/) <http://www.nws.noaa.gov/nwr/>

[iNWS - Interactive NWS](https://inws.ncep.noaa.gov/) <https://inws.ncep.noaa.gov/>

[EMWIN - Emergency Managers Weather Information Network](http://www.nws.noaa.gov/emwin/) <http://www.nws.noaa.gov/emwin/>

[HazCollect](https://www.weather.gov/hazcollect/) <https://www.weather.gov/hazcollect/>

[NWS StormReady® Program](https://www.weather.gov/stormready/) <https://www.weather.gov/stormready/>

[NWS TsunamiReady® Program](https://www.weather.gov/tsunamiready/) <https://www.weather.gov/tsunamiready/>

[NWS Heat Safety Tips and Resources](https://www.weather.gov/safety/heat) <https://www.weather.gov/safety/heat>

[NWS SKYWARN Storm Spotter Program](https://www.weather.gov/skywarn/) <https://www.weather.gov/skywarn/>

[NOAA Weather Wire Service \(NWS\)](http://www.nws.noaa.gov/nwws/) <http://www.nws.noaa.gov/nwws/>

- [NOAAPort](https://www.weather.gov/noaaport/) <https://www.weather.gov/noaaport/>

[NOAA Stay connected](http://www.noaa.gov/stay-connected) <http://www.noaa.gov/stay-connected>

[Recommended Best Practices for the Activation of Outdoor Warning Sirens](http://skywatch.org/ows.pdf) <http://skywatch.org/ows.pdf>

[NWS Advanced Hydrologic Prediction Service \(AHPS\)](https://water.weather.gov/ahps/) <https://water.weather.gov/ahps/>

Related Training

[SKYWARN® Spotter Training](https://www.meted.ucar.edu/training_course.php?id=23) 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) <http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-247.a>

- [IS-271 Anticipating Hazardous Weather & Community Risk](https://training.fema.gov/is/courseoverview.aspx?code=IS-271.a) <https://training.fema.gov/is/courseoverview.aspx?code=IS-271.a>

[G365 Partnerships for Creating and Maintaining Spotter Groups](https://training.fema.gov/stcourses/) <https://training.fema.gov/stcourses/> Check with State Training Agency for availability

[G271 Hazardous Weather and Flooding Preparedness](https://training.fema.gov/stcourses/) [http://training.fema.gov/stcourses/](https://training.fema.gov/stcourses/) Check with State Training Agency for availability

Case Studies

[Mother's Day Tornado Outbreak in Georgia - May 11, 2008](https://www.weather.gov/ffc/momsdaytor08) <https://www.weather.gov/ffc/momsdaytor08>

[Van Wert County, Ohio StormReady Success, 2002](https://www.weather.gov/iwx/20021110_tornado_stormready) https://www.weather.gov/iwx/20021110_tornado_stormready

[Roanoke, Illinois StormReady Success, 2004](https://www.weather.gov/ilx/13jul04) <https://www.weather.gov/ilx/13jul04>

[Palm Sunday Tornado Event, 1994](https://www.weather.gov/bmx/event_03271994) https://www.weather.gov/bmx/event_03271994

- [West Virginia Flash Flooding Event, 1990](https://www.weather.gov/safety/flood-states-oh) <https://www.weather.gov/safety/flood-states-oh>