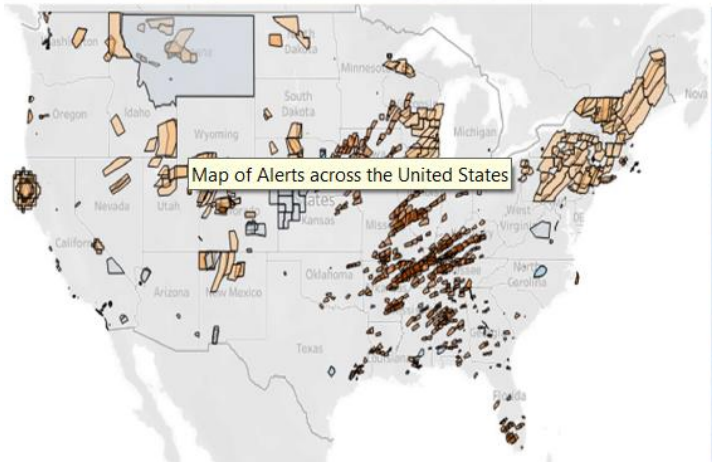

IPAWS Best Practices

Integrated Public Alert & Warning System (IPAWS) Guidance and Techniques for Sending Successful Alerts, Warnings, and Notifications

June 2023

FEMA

IPAWS

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1. Purpose

The Integrated Public Alert & Warning System (IPAWS) is the Federal Emergency Management Agency's (FEMA) national system for local alerting that provides authenticated emergency and public safety information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration's Weather Radio.

FEMA's IPAWS Best Practices Guide (BPG) provides guidance to IPAWS Alerting Authorities (AA) on the effective use of Emergency Alert System (EAS), Wireless Emergency Alerts (WEA), and Non-Weather Emergency Messages (NWEM) via IPAWS to issue timely and effective messages in response to threats to public safety. Effective use of alerting systems increases public responsiveness, reduces corrective action, and improves public trust in alerting systems and the information communicated via those systems in response to potential threats. The IPAWS BPG will be a living document and amended with updates, as necessary.

AAs may use IPAWS to issue alerts, warnings, and notifications (AWN) to the public. It is important to understand the applicability of each when deciding to inform the public of potential threats. **Figure 1** below should be used as a reference when issuing AWNs.

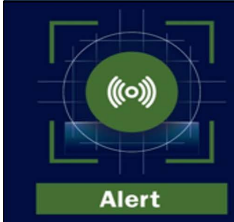
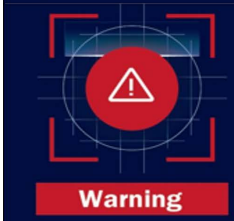
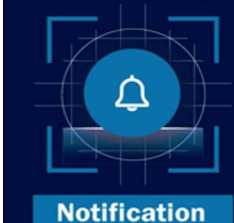
Type	Timeframe	Purpose	Examples
	At the beginning of and during incidents with ongoing immediate threats.	Gain the attention of the public and draw their attention to a risk or hazard.	Active shooter and other dangers, hazardous materials concerns, 911 outages, AMBER alerts.
	Before incidents.	Distribute guidance to prepare for an anticipated incident.	Weather watches/warnings, fire warnings evacuation orders.
	During and after immediate threats.	Instruct immediate protective actions and provide ongoing communications relevant to an event to reduce milling and encourage public action. Convey time-sensitive information on response- and recovery-related services.	Protective actions, evacuation routes, boil-water advisories, return-from-evacuation notices, area-accessibility updates.

Figure 1: Essentials of Alerts, Warnings and Notifications[1]

[1] Cybersecurity and Infrastructure Security Agency (CISA) Safecom/National Council of Statewide Interoperability Coordinators, *Essentials of Alerts, Warnings, & Notifications*, April 2020.

2. Alerting Authority Responsibilities

To effectively issue AWN, AAs must ensure internal policy, procedures, protocols and enabling technologies are in place and personnel are trained and competent to execute AWN functions.

Ensure the following are in place

- Secure and available internet access.
- Access to agency email.
- Identified AWN roles and responsibilities of personnel.
- Update AWN plans to include IPAWS.
- Understanding of your AWN software/tool(s) capabilities and functions.
- Established IPAWS Standard Operating Guides (SOG), Standard Operating Procedures (SOPs), and applicable policy.
- Required training and practice (e.g., Monthly Proficiency Demonstrations (MPDs) and exercises).
- Access to the IPAWS User's Portal to maintain agency contact information.
- IPAWS Technical Support Services 24/7 contact information is available (1-844-729-7522; fema-ipaws-lab@fema.dhs.gov).
- IPAWS general inbox available for customer support issues (ipaws@fema.dhs.gov) is available.
- Inclusion of the IPAWS email distribution list (please send inquiries to ipaws@fema.dhs.gov).

2.1. Implement Standard Operating Procedures

Agencies should ensure SOPs and/or SOGs are in place to define AWN roles and responsibilities to issue an IPAWS AWN and mass notification.

Policies, procedures and processes

Public safety officials should ensure that SOPs/SOGs outline when and how to send an IPAWS AWN for the following situations:

- Sudden, unforeseen or unpredictable incidents
- Imminent threat to life or property
- Public safety information that is relevant but not immediately threatening to the public
- Updates, recovery, and reunification information
- Applicable information for isolated/local situations

2.2. Establish back-up/cross-jurisdictional AWN support

AAs should develop relationships with other AAs at the state, local, tribal, and territorial levels to share permissions for back-up AWN. These pre-disaster arrangements will enable AAs to alert on behalf of AAs that are unable to AWN.

Shared permissions and cross-jurisdictional usage

- Evaluate the possibility(ies) and benefit(s).
- Collaborate and coordinate with neighboring jurisdictions.
- Identify alerting software used by other jurisdictions. Try to secure a variety of alert origination software tools to avoid reliance on one vendor-product (single point of failure).
- Establish plans/procedures (e.g., MOUs, agreements, SOPs, and SOGs).
- Update Public Alerting Application (PAA), obtain state(s) approval, provide to IPAWS.
- Practice and train within the IPAWS Technical Support Services environment.
- Include in functional exercise to evaluate joint agreements.

2.3. Develop and implement an Alert Escalation Process (AEP)

On occasion, an AA may be unable to issue an AWN. Implementation of an AEP with local, county and state agencies can solve this problem before it occurs in an actual event.

Developing an AEP

- Work with local, county and state agencies to establish an Alert Escalation Process that details plans/processes for alerting on behalf:
  - City/town contacts county IPAWS AA for AWN assistance.
  - County agency contacts state IPAWS AA for AWN assistance.
- Identify 24/7 points of contact or designated authority(s) at the state level.
- Practice, train and exercise this process in the Technical Support Services Facility (TSSF) environment to evaluate processes.
- Consider establishing an AEP Memorandum of Understanding (MOU) with city/county/state agencies.

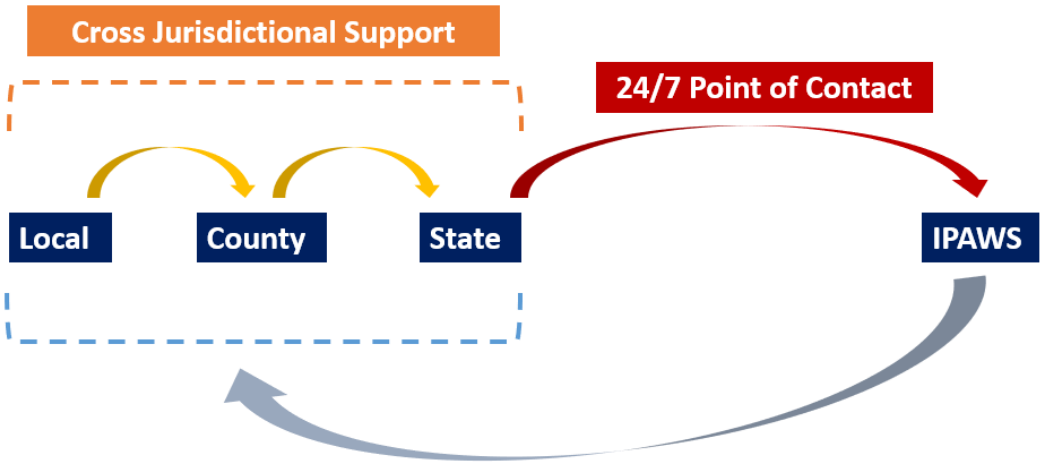


Figure 2: Alert Escalation Process

2.4. Public outreach and education

It is Public Safety Officials' and AAs' responsibility to educate communities on AWN and to understand communities' requirements and needs. Through these efforts, Public Safety Officials and AAs improve the public's understanding of AWN and its response to an incident.

Community engagement and outreach

- Know a community's needs (e.g., local hazards, access and functional needs, and non-English speaking communities).
- Engage in community outreach efforts to explain IPAWS' purpose and value. Use media outlets and opportunities such as social media, campaigns, community engagements, etc.
- Solicit community input and requirements.
- Publicize a personalized URL to provide the public with a trusted and recognizable resource to obtain public safety information.
- Update AWN procedures and processes to meet community needs.

Did you know?

The FEMA IPAWS website contains resources and information and is updated regularly. If you have resources that may benefit other AAs, please reach out to fema-ipaws-lab@fema.dhs.gov for possible inclusion.

Integrated Public Alert & Warning System | FEMA.gov

Crafting an IPAWS Alert, Warning or Notification

2.5. Warning Message Style[2]

The style in which messaging is presented to the public is as important as message content. Use the following guidance to improve your warning message style:

Use clear language: Do not include jargon, technical terms, acronyms or unfamiliar concepts. Deliver information using plain language that is instructive.

Add certainty: Use authoritative language about the threat. Relay as much certainty about the threat, impact and protective actions.

Be specific: Content should be specific and include details about the hazard, location at risk, impacts, and actions people should take to be safe. Being specific offers information for decision-making. For example, instead of stating "shelter in place" say "go to the lowest floor of the building, interior space, crouch down, and cover your head and neck."

Be Consistent: Ensure messaging internally and externally is consistent. Do not contradict your messaging sent through multiple sources. Consistency with hazard, location, impact and action is important. Remember people will receive information from multiple sources.

Milling is a term used to describe what occurs when people are confused and unsure of AWN validity. This leads to people seeking information regarding an incident through additional outlets and thereby delaying actionable responses. Social science research has identified key elements of message content to increase likelihood that people at risk will act and decrease protective action delay.

[2] Sutton and Kuligowski (2019) Alerts and Warnings on Short Messaging Channels. Guidance from an Expert Panel Process. *Natural Hazards Review*. 20(2)

Warning Message Contents[3]

Message Content	Description
Source	Use local, familiar, trusted sources. Spell it out completely (no acronyms).
Hazard	Provide the name of the hazard for which the warning is being sent. Be as specific as you are able to be about the type of threat affecting the population.
Hazard Impact	Describes the impacts that may occur as a result of the threat and the reasons that a person should take protective action.
Location	Use familiar landmarks and known physical boundaries in addition to city/county names. In some cases, location includes where people should go as well as the areas affected.
Protective Action Guidance	Tell people what they can do to protect themselves. Be specific and instructive about how to take action. Also, tell them when actions need to be taken.
Expiration Time	Most warnings will not include an expiration time, but some will. If you do not include an expiration time, tell people where to get more information about the hazard and how they will learn that conditions are safe.

Figure 3: Warning Message Content

Did you know?

Dr. Dennis Mileti, a researcher on the effectiveness of alert, warning and notification provided a PrepTalk that showcased his research on the public's reaction to mass notifications. He provided practical guidance on how to reduce milling by crafting effective messaging and using multiple delivery methods to amplify notification.

Dr. Jeanette Sutton has performed research on effective AWN message content. Her work can be found at The Warn Room website.

[3] Sutton and Kuligowski (2019) Alerts and Warnings on Short Messaging Channels. Guidance from an Expert Panel Process. *Natural Hazards Review*. 20(2)

Things to think about before pushing the "button"

- Do not use IPAWS as a "super tweet!" Establish criteria for sending AWN via IPAWS. Use IPAWS when immediate notification is needed and when you want the public to respond to an incident.
- An effective IPAWS AWN provides relevant, necessary, and clear information to the public. Before sending an IPAWS AWN, ask:
  - Does the situation require immediate public response?
  - Is the information pertinent to public safety?
  - Does the message make sense (assume that this is the only message being received by the public)?
  - Am I following best practice by geo-targeting the alert or activating county-wide out of habit?
- Perform outreach campaigns to educate the public on the purpose and use of IPAWS to provide emergency and public safety information.

3. IPAWS Pathways for Alert, Warning and Notification

3.1. Emergency Alert System

The Emergency Alert System (EAS) is used by federal, state, local, tribal and territorial (FSLTT) authorities to deliver important public safety information to affected communities via television, radio and cable. It is imperative that AAs understand how EAS operates and broadcasters' responsibilities.

Did you know?

State Emergency Communications Committees (SECC) are volunteer non-governmental organizations that assist with the development of state EAS plans and typically have relationships with local broadcasters. They can be a valuable resource to IPAWS AAs.

Visit the SECC's resource page to find your SECC point of contact.

Understand how EAS works

- Radio and television stations participate in the Emergency Alert System voluntarily (i.e., radio and television stations are not required to air local AWN).
- Build collaborative relationships with the local radio and television stations to agree on specific AWN to air.
- Radio and television stations have EAS devices installed to preempt radio and television broadcasts. EAS devices vary in capabilities (e.g., EAS display and text scroll speed).
- EAS's footprint is based upon station coverage area, which often expands many miles and past county/state boundaries. The targeted area must be clearly stated in the message content.
- EAS messages are targeted by county or county equivalents but will be delivered to a broadcast or cable service provider's entire service area. Although polygons and circles may be sent with an EAS AWN, they will not restrict EAS message distribution to the area of the polygon or circle.
- State agencies should build a relationship with State Emergency Communications Committee resources.

3.1.1. EAS AWN CONTENT

Public safety information is effective when AWN contains clear and actionable content. The following best practices for EAS content should be followed by AAs.

EAS AWN content

- EAS supports up to 1,800 characters or two minutes of audio.
- EAS supports up to 31 geocodes.
- Avoid acronyms that will be confusing to recipients (e.g., most of the public does not understand acronyms used by dispatch such as "BOLO").
- Message content must include the following: Source, Hazard/Incident, Location, Protective Action, and Expiration Time (if known).
- Do not use special characters with Spanish text.
- Avoid symbols such as #, *, $,] ,}
- The instruction field is optional and will follow the EAS description content when aired. Do not copy EAS description content into the instruction field.
- State agencies, in collaboration with state SECC and broadcasters, may issue the Required Monthly Test (RMT) and include preparedness or other public safety information in place of the routine RMT language.

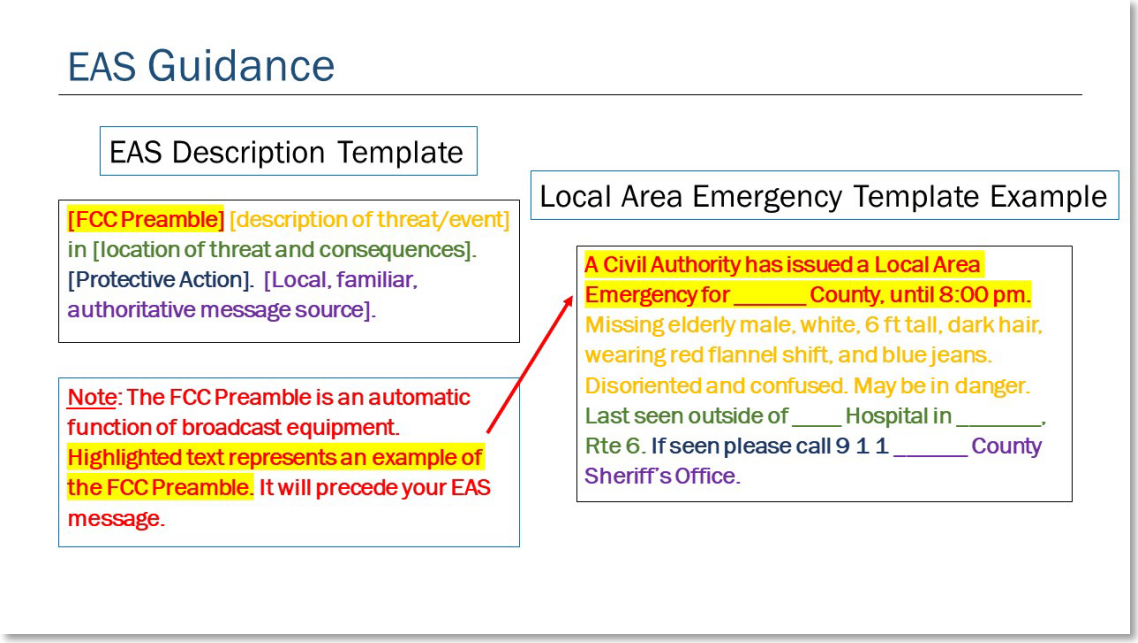


Figure 4: EAS Message Content

Build AWN Templates

- Build AWN templates within the alerting software (if supported) for common/possible incidents to reduce the time needed to craft the AWN.
- Avoid use of acronyms.
- Do not include special characters such as { } | \ ^ ~ [ ] < >
- Practice using templates during Monthly Proficiency Demonstrations (MPDs), training, and exercises.

3.1.2. TEXT-TO-SPEECH VS. RECORDED AUDIO

Most EAS devices have built-in Text-to-Speech (TTS) engines. TTS capabilities vary among manufacturers, including the quality of spoken text and pronunciation capabilities. All EAS devices support audio attachments, and they will air the recorded audio over TTS when included in an EAS message (dependent upon EAS device configurations).

Text-to-Speech

- Do not include special characters in an EAS description. EAS devices that are set to TTS process special characters differently. For example, a "#" may be aired as "pound" or "hashtag."
- Unrecognized special characters will appear incorrectly on the television or be mis-pronounced on the radio (e.g., an empty square or upside-down question mark in place of the special character).
    - Craft the EAS description field phonetically:
        - Add spaces between numbers that need to be read separately (e.g., phone numbers such as 9 1 1 instead of 911 which is pronounced over TTS as nine-hundred eleven or 8 4 4 7 2 9 7 5 2 2 instead of 844-729-7522).
        - Spell out numbers (e.g., Nine One instead of 91).
- Run test messages in the TSSF training environment to preview text-to-speech. Make corrections to alert content, as necessary.

Audio Attachments

- Include recorded audio to avoid mispronunciations and misunderstanding.
- Recorded audio must be in .mp3 format (required by all EAS devices).
- Audio attachments cannot be longer than two minutes.

3.1.3. SUPPORTED LANGUAGES

IPAWS supports both English and Spanish content. English is required, while Spanish is optional.

Spanish Language Guidance

- Spanish translation is not provided for alerts. This means that AAs must write the alert text in Spanish.
- Avoid using automatic translation services because they may not translate English to Spanish correctly, which could confuse the public.
- Work with an interpreter or Spanish speaker to craft the Spanish text.
- Do not use accent marks (including tildes [~]) when crafting Spanish text since these special characters may not be processed properly by EAS devices.
- Include recorded audio to ensure proper pronunciation.
- Work with local broadcasters to ensure EAS devices are configured to support English, Spanish, or additional languages (dependent upon EAS device capability).
- Consult with local broadcasters who may be able to assist with Spanish translation.

3.1.4. EAS BROADCAST COVERAGE

EAS messages rely upon a county code known as the Federal Information Processing Standard (FIPS) code. These FIPS codes set the geographic boundary for the EAS alert.

EAS broadcast coverage

- EAS's footprint is based on the station's coverage area. This means the entire county will receive an EAS message at the minimum.
- Expect bleed-over into neighboring counties/states if close to a border. Radio and television stations in neighboring counties/states may monitor your county FIPS code and air your AWN.
- Polygons and circles can be sent with an EAS AWN, but they will not restrict the message to the specific area of the polygon or circle.
- Describe targeted area in EAS messaging to reduce confusion.

3.1.5. EVENT CODES

EAS requires the use of an Event Code. Event codes are meant to briefly define the nature of an incident. However, they can be very confusing to the public. IPAWS state signatories approve their respective AAs for specific event during the IPAWS application process.

Selecting an event code

- Understand event code meaning and purpose (please see Annex 4).
- Be familiar with permitted event codes in case the alerting software does not restrict event code selection to certificate permissions.
- Select event code per incident and as defined by internal procedures and processes.
- Create a template for each event code or type of incident.

Event code presentation

- The name of the event code (e.g., Civil Danger Warning [CDW], Nuclear Power Plant Warning [NUW], Radiological Hazard Warning [RHW], Evacuation Immediate [EVI]) will be heard and appear to the public before any other instructional information.
- Use of action Event Codes (Evacuation Immediate (EVI) and Shelter-in-Place Warning [SPW]) is not recommended for EAS as the structure of the required EAS Message Header will imply that the action applies to an entire county.
- Use less alarming event codes (e.g., Local Area Emergency [LAE] or Civil Emergency Message [CEM]) and clearly identify the targeted area to avoid confusion.

3.2. Wireless Emergency Alerts (WEA)

Wireless Emergency Alerts (WEAs) are used by FSLTT authorities to deliver important public safety information to affected communities via cellular phones. It is important that AAs understand how WEA operates to use this pathway to provide effective AWN.

Understand how WEA works

- All major cellular carriers and several smaller carriers support WEAs.
- Since WEA relies upon broadcast technology, it does not experience network congestion.
- WEA does not require recipients to sign-up or subscribe.
- The public may opt-out of all WEAs other than a National Emergency Message.
- WEAs are re-broadcast from activated cellular towers for the duration of the AWN (please see Update and Cancel best practices below).
- WEA is the only IPAWS pathway that constrains distribution of AWN via polygon(s)/circle(s).
- Newer smart phones are equipped with Device Based Geo-Fencing (DBGF), where the phone compares its location to coordinates of a polygon/circle and presents the AWN if within the coordinates or 0.10 of a mile outside of the polygon or circle (please see polygon/circle best practices below).

3.2.1. 360- AND 90- CHARACTER MESSAGES

WEAs can provide both 360- and 90-character messages. IPAWS requires the 90-character WEA message to ensure all phones receive AWN regardless of model or network capability. WEA 360 character is optional but highly recommended since smart phones support it. **IMPORTANT**: The WEA 360-character field is NOT a continuation of the 90-character text field. Phones will display the 90-character message, or 360 characters if capable. Most phones in use today display 360 characters.

360-character messages

- Always use the 360-character message field to provide as much information about an incident and the protective action needed.
- Avoid acronyms and landmarks that only locals know.
- Craft the 360-character WEA message before the 90-character WEA, and then cut the 360 to 90 (typically easier).
- Include Source, Hazard, Location, Protective Action, and Expiration Time (if known).
- Include a URL or directive on where to obtain additional authoritative information regarding incident.

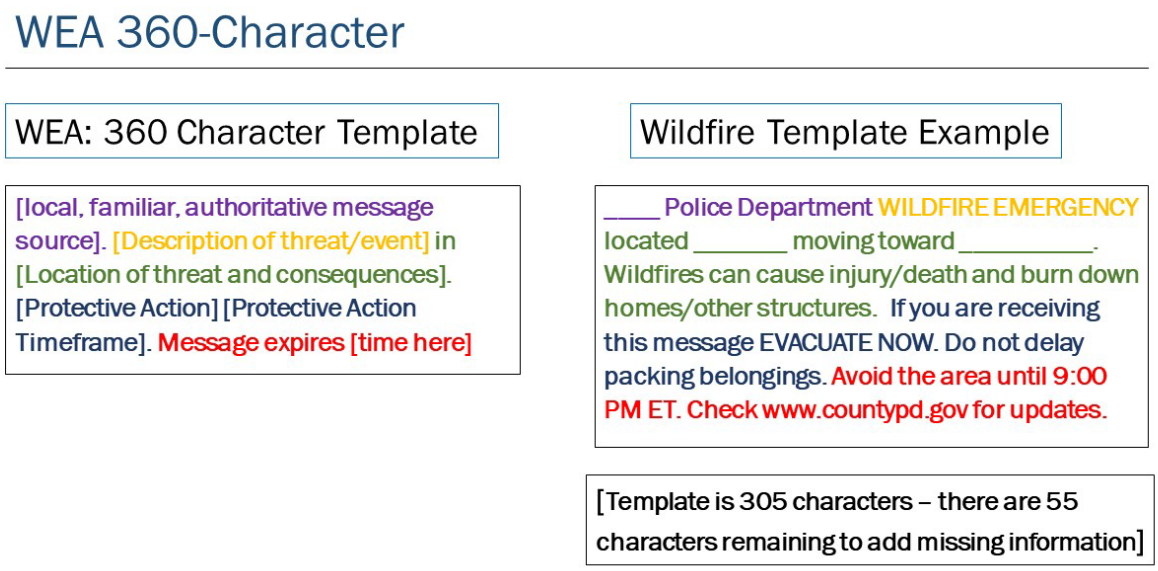


Figure 5: 360-Character WEA Template

90-character messages

- A 90-character message is required for non-Smart phones (e.g., older "flip phones").
- Avoid acronyms and landmarks that only locals know.
- Craft 90-character message from key information contained in the 360-character message.
- Include Source, Hazard, Location, Protective Action, and Expiration Time (if known).
- Include a URL or place to obtain more information about the incident if there is enough character space.
- Do not dismiss the value of 90-character messages, as they can still provide relevant information about an incident despite their reduced length.

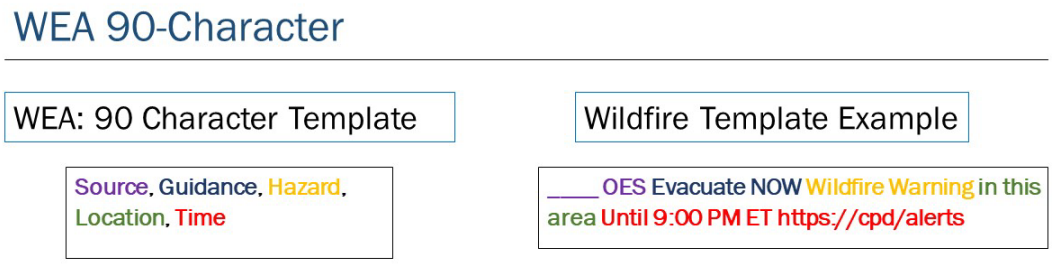


Figure 6: 90-Character WEA Template

Message templates

- Build message templates within the alerting software for permitted event codes.
- Include as much content as possible – add polygon(s)/circle(s), and established URLs (e.g., an established tiny URL or social media site) to the template.
- Practice using templates during MPDs, training and exercises.

3.2.2. COPYING AND PASTING AWN CONTENT

Copying and pasting message content expedites the development process and reduces errors. However, this practice can introduce characters that cause problems with message processing.

Copying and pasting from outside sources

- Ideally, craft message content within alerting software text fields.
- Do not copy and paste from Microsoft Word or an email. This content often contains hidden formatting that can display erroneous characters in the received alert.
- Craft message content in a text editor application such as Notepad and copy/paste from the text editor.
- If message content is received in Microsoft Word or an email, paste it into a text file such as Notepad first. Next, copy/paste from the Notepad platform.

3.2.3. UNIFORM RESOURCE LOCATORS (URL)

The inclusion of a URL in a WEA provides several benefits such as the ability for recipients to obtain additional authoritative information about an incident (e.g., zone and evacuation maps, multimedia, and audio files).

Including a URL

- Use a URL shortener (e.g., tiny URL) to save character space in your 360- and 90-character messages.
- Save additional character space by eliminating unnecessary characters such as “WWW.”
- Establish a personalized agency specific short URL that will be recognizable as a trusted source for recipients that may be wary of clicking unknown links.
- Before composing an AWN that includes a URL, ensure the hosting website can handle a large influx of traffic.
- Send recipients to social media platforms that can handle the traffic and increase alert amplification by sharing and forwarding the alert message.

Including a phone number

- Include a phone number for recipients to obtain recorded information but be beware of increased call volume.
- Construct AWN content with clear and concise information to lessen call volume.
- Avoid sending recipients to dispatch due to the risk of tying up incoming lines and overwhelming dispatch personnel.
- Work with dispatch if it is the only option for additional information.
- Save additional character space by eliminating unnecessary characters such as dashes within phone numbers. Phone numbers will remain "clickable" after performing this action.

3.2.4. SUPPORTED LANGUAGES

Per FCC regulations, AWN may be presented in English and Spanish. While English is required, Spanish is optional.

Spanish language guidance

- IPAWS does not translate English into Spanish. This means the text in the Spanish text fields must be entered as Spanish.
- Avoid using automatic translation services because they may not translate English to Spanish correctly, leading to public confusion.
- Work with an interpreter or Spanish speaker to craft the Spanish text.
- Do not use accent marks (including tildes [~]) when crafting Spanish text since these special characters may not be processed correctly by cellular carriers and phones.
- Include a URL in the WEA text for recipients to receive text or recorded audio in Spanish.

3.2.5. POLYGONS AND CIRCLES

WEA is the only major IPAWS pathway that supports polygons and circles.

Understanding polygons and circles

- When using Geographic Information System (GIS) shape files as polygons or circles, work with GIS analysts to ensure they do not exceed 100 vertices.
- Keep polygons and circles simple (e.g., coastlines/boundaries do not need to be precisely drawn). Practice this technique in the IPAWS demo environment.
- IPAWS supports up to 10 polygons and circles up to 100 vertices.
- Avoid using a "freeform" drawing tool if your software allows it. A freeform curve contains many individual vertices.
- Polygons and circles may overlap.
- Lines defining each single polygon may not intersect or cross (e.g., a "bowtie").
- Keep polygons/circles within permitted boundaries. Practice drawing polygons and circles when conducting required MPDs.

Did You Know?

WEA 3.0 introduced device-based geo-fencing (DBGF), which restricts targeted area(s) to no more than 1/10th of a mile outside of the polygon/circle. DBGF relies on the capability of the cell device to determine via its GPS if it is located within a polygon/circle and should present alert information to its holder. Most cell devices support DBGF. This capability is expected to improve as more DBGF-enabled cell phones are purchased by the public.

3.2.6. WEA HANDLING CODES

IPAWS requires WEA Handling Codes. SLTT AAs must select a WEA Handling Code based upon event type. Most event codes can be Imminent Threat or Public Safety based upon the severity of an incident. The selection of a WEA Handling Code determines how the WEA Banner (or header) will appear on cellular devices. For example:

- **Imminent Threat – "Emergency Alert"**
- **Public Safety – "Public Safety Alert"**
- **WEA Test – "WEA Test"**

***Note:** Android devices will display the Severity threshold selected by the AA (e.g., if "Severe" is selected, the WEA Banner will display "Severe").

Imminent threat vs. public safety

- Use Imminent Threat (Emergency) WEA Handling Code if the public needs to act immediately to preserve life or property (e.g., evacuation, shelter in place, missing or endangered person).
- Use Public Safety WEA Handling if the incident is non-life threatening but the public would benefit from the receipt of the information (e.g., 911 outage or boil water).

WEA Handling Reference Table

Imminent Threat and Public Safety WEA handling codes can be used with most, but not all event codes. Please see the chart below **(Figure 7)** for recommendations on which WEA handling code to use:

		WEA Handling Codes			
Event Code	**Event**	**Imminent Threat***	**Public Safety***	**Amber****	**WEA Test*****
AVW	Avalanche Warning	X			
CDW	Civil Danger Warning	X			
CEM	Civil Emergency Message	X			
EQW	Earthquake Warning	X			
EVI	Evacuation Immediate	X			
FRW	Fire Warning	X			
HMW	Hazardous Materials Warning	X			
LEW	Law Enforcement Warning	X			
NUW	Nuclear Power Plant Warning	X			
RHW	Radiological Hazard Warning	X			
SPW	Shelter In-place Warning	X			
VOW	Volcano Warning	X			
BLU	Blue Alert		X		
LAE	Local Area Emergency		X		
TOE	911 Telephone Outage Emergency		X		
CAE	Child Abduction Emergency			X	
RWT	Required Weekly Test				X
RMT	Required Monthly Test				X
DMO	Practice/Demo Warning				X

Caveats:
*Event codes for Imminent Threat and/or Public Safety WEA Handling. They may be interchangeable dependent upon situation and message purpose.
**Child Abduction Emergency (CAE) is restricted to WEA Handling "AMBER" for the National Center for Missing and Exploited Children and approved State Agencies.
***Test event codes restricted to WEA Handling "WEA Test". Recommend using Required Weekly Test (RWT) to perform live code WEA tests unless agency has coordinated an RMT or DMO with local broadcasters.

Figure 7: WEA Handling Codes Reference Table

3.2.7. PERFORMING WEA TESTS

WEA tests will only be received on cellular devices that have opted to receive WEA test alerts. Use WEA Test to determine WEA effectiveness and reach. Please see Annex 3 for instructions on how to opt-in to receive WEA Tests on iOS and Android.

WEA testing

- Use event code Required Weekly Test (RWT) to conduct a WEA Test.
- An FCC waiver is not needed when using test event codes for WEA. A FCC waiver IS required for to send live tests - using Event Codes other than RWT - to the public
- When performing a WEA Test:
    - Conduct a social media or public information campaign to explain to any members of the public that have opted to receive test messages that a test will be performed and there is no need for action.
    - Appoint test monitors in and around the alert area (polygon or circle) to collect information and provide feedback on test receipt. Ideally, monitors will have different phone models and cellular service providers.
    - Have monitors collect information such as the manufacturer of the device, the wireless service provider, and the time the alert was received.
- Do NOT test WEA on a weekly basis. RWT is an Event Code type, not a mandate.
- Do not use Required Monthly Test (RMT) to conduct WEA tests because an RMT message will activate broadcast equipment and disrupt broadcasters' monthly test schedules if EAS distribution is accidentally selected.

3.2.8. EVENT CODES

WEA requires use of an event code. However, the event code is not displayed on cellular devices. IPAWS state signatories approve their respective AAs for specific event codes during the IPAWS application process. AAs should understand their event code permissions and select an event code based upon internal procedures and processes.

Selecting an Event Code

- Understand event code meaning and purpose (please see Annex 4).
- Be familiar with permitted event codes in case the alerting software does not restrict event code selection to certificate permissions.
- Include event code per incident and internal procedures/processes.
- Create a template for each event code or type of incident.
- Be aware that event codes do not display on cellular devices.

3.2.9. UPDATING AND CANCELING A WEA

After sending an AWN via WEA, AAs should continue to monitor the incident to determine whether a message should be updated or canceled before it expires. This is important since WEAs are retransmitted at intervals by activated towers until expiration.

Updating and canceling a WEA

- Update an AWN if new or additional information is required. Using Update will cancel the original AWN and issue a new AWN.
- When using Update, the best practice is to reference pertinent information from the original AWN to lessen confusion for people receiving only the update and not the original AWN.
- Cancel an AWN if the incident has been resolved before the intended expiration period Cancel will stop the rebroadcast of the AWN, it will not cause an “All Clear” message to be sent to the public.

3.3. Non-Weather Emergency Messages (NWEM)

3.3.1. NWEM PROCESSING

Non-Weather AWNs are aired via NOAA Weather Radio (NWR). NWRs are configured by FIPS code and therefore designated for an entire county like EAS. NWEMs are sent to a local NOAA Weather Forecast Office (WFO), where an individual examines alert content (they may make minor changes) and queues NWEM for distribution by NOAA transmitters.

Coordination

- Contact the local National Weather Service WFO to verify NWEM capabilities.
- Visit the National Weather Service Local Offices page to find a Point of Contact for the WFO.

Crafting NWEMs with Alert Origination Software Tools

- Contact alerting software vendor and ask if the <senderName> is properly configured as "Requesting Agency" so that the agency's name will be cited correctly when broadcast over NWR.
- Select NWEM (some software tools display as "HazCollect" or "NWS") to achieve NWR dissemination.
- Enter clear and concise "Description" and "Instruction" information since these two fields are broadcast by NWR and included in NWS text products used by others.
- Check punctuation and avoid use of special characters.
- Place spaces between each digit of phone numbers so that the NWR text-to-speech engine reads correctly.

Testing NWEM Alert Capabilities with NWS

- Coordinate with your SECC and local NWS WFO about doing an end-to-end demonstration using Practice/Demonstration Warning (DMO). DMO reduces the risk of releasing a demo to the public because most broadcasters only log receipt of a DMO.
- Conduct any necessary public outreach regarding the demo.
- Conduct the demo using the following procedures:
    - Populate alert origination software using values. Software vendors can assist.
    - Select the NWEM dissemination channel and send.
    - Validate receipt of the alert on broadcaster EAS encoder/decoder equipment

Did You Know?

- NWS only receives your alert if your agency is authorized by IPAWS to send it to the NWEM channel AND you select “NWEM” (or similar) in your alert authoring software.
- Use the exact language you entered in your alert software’s “Description” and “Instruction” blocks. Check punctuation. Do not use special characters. Add a space between digits/characters in phone/license plate numbers.
- For NWR only, NWS staff reviews your alert before broadcast and may edit it to improve the text-to-speech conversion.
- For AWN issued via both EAS and NWR there is potential for duplicate EAS activation when the alert is for more than one geocode. No duplicate EAS is expected for single county alerts or single state alerts using 000 location code.
- Coordinate with your local NWS Warning Coordination Meteorologist BEFORE an emergency occurs to ensure a positive outcome and avoid any potential confusion during the adverse event (please visit this NWS link for more information).

3.3.2. EVENT CODES

IPAWS requires the selection of an Event Code when sending an NWEM. Event codes define the nature of the event at hand. Access to each individual Event Code depends on each AA’s established IPAWS permissions.

Selecting an Event Code

- Familiarize yourself with permitted event codes in the event the alerting software does not restrict event code selection based on certificate permissions.
- NWEM does not support event codes: RWT and RMT.
- Use DMO for testing NWEM.
- Create a template for each event code or incident type.

4. AWN Redistribution

IPAWS AWN are disseminated via EAS, WEA and NWEM. They are also posted to the IPAWS All-Hazards Feed, which is an ATOM feed where IPAWS approved redistribution service providers can pull and redistribute IPAWS messages via applications, software tools, websites, digital signage, and social media, among other options.

Keep in mind

- You may not know that your AWN is being redistributed through several IP-based services.
- Provide clear and concise AWN content (e.g., incident type, targeted area, actionable information, and where to obtain more information).
- If you are aware of local redistribution services, work with service providers to ensure adequate AWN content.

5. IPAWS Technical Support Services Facility (TSSF)

5.1.1. TSSF 24/7 SUPPORT SERVICES

The IPAWS TSSF is staffed 24/7 with subject-matter experts (SMEs), who use their expertise in emergency management, public safety communications, public works, and broadcasting to assist AAs with IPAWS needs.

TSSF support

- IPAWS encourages and supports practicing and exercising IPAWS alerting through the TSSF. The TSSF is equipped to provide technical support for the various issues AAs may encounter when using IPAWS. The IPAWS TSSF is available to assist with:
    - Troubleshooting errant alerts
    - Explanation of error codes
    - MPDs
    - Alerting best practices
    - Webinars to support training initiatives
    - Test and exercise support (at all levels)
    - Other IPAWS-related initiatives
- The IPAWS TSSF is always available, including holidays. The toll-free number for the facility is **1-84-IPAWSLAB or 1-844-729-7522.**

5.1.2. MONTHLY PROFICIENCY DEMONSTRATIONS (MPDs)

AAs are required to send an IPAWS AWN monthly to the IPAWS TSSF test environment.

Understand the importance of MPDs

- IPAWS requires AAs to issue MPDs to the IPAWS TSSF to remain in good standing with IPAWS.
- The issuance of a live AWN does not meet the the monthly IPAWS TSSF's MPD requirement .
- AAs can send more than one MPD a month. However, at least one successful alert must be sent to the TSSF via EAS, WEA, or NWEM to fulfill the MPD requirement.
- Use this requirement to train, practice, and exercise IPAWS.
- Do not use a generic template to conduct the MPD. Instead, use the scenario-based templates on the TSSF's website.

5.1.3. INCORPORATE IPAWS INTO TRAINING AND EXERCISES

IPAWS can be incorporated into training and exercise initiatives. Inclusion of IPAWS is scalable and adaptable to a wide range of exercises such as a tabletop exercise and or a functional exercise. Please reach out to TSSF personnel to obtain more information.

Incorporate IPAWS into training and exercises

- Integrate IPAWS into all discussions-based and operations-based exercises.
- Schedule an IPAWS workshop with the TSSF to improve user proficiency.
- Maintain MPD status.
- Add IPAWS specific injects/scenarios.
- Exercise the following:
    - AWN trigger points
    - AWN approval process, procedure, checklist
    - Assess saved polygons and circles
    - Clarify message templates and crafting
    - Include URLs and assess effectiveness
    - Review time to send message after incident notification
    - Practice cross-jurisdictional/back-up alerting permissions

ANNEX 1 – ACRONYM LIST

Acronym	Description
AWN	Alert, Warning and Notification
AA	Alerting Authority
AAR	After Action Report
ADR	Administrative Message
AO	Alert Originator
AOSP	Alert Origination Software Provider
AVA	Avalanche Watch
AVW	Avalanche Warning
BLU	Blue Alert
CAE	Child Abduction Emergency
CDW	Civil Danger Warning
CEM	Civil Emergency Message
CHP	California Highway Patrol
CMAS	Commercial Mobile Alert System
COG	Collaborative Operating Group
DBGF	Device Based Geo-Fencing
DMO	Practice/Demonstration Warning
EAS	Emergency Alert System
EQW	Earthquake Warning
EVI	Evacuation Immediate
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIPS	Federal Information Processing Standard
FRW	Fire Warning
FSLTT	Federal, State, Local, Tribal, Territorial
GIS	Geographic Information System
HAZ COLLECT	All-Hazards Emergency Message Collection System
HMW	Hazardous Materials Warning
IPAWS	Integrated Public Alert and Warning System
IPAWS-OPEN	IPAWS-Open Platform for Emergency Networks
LAE	Local Area Emergency
LEW	Law Enforcement Warning
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPD	Monthly Proficiency Demonstration

Acronym	Description
NOAA	National Oceanic and Atmospheric Administration
NUW	Nuclear Power Plant Warning
NWEM	Non-Weather Emergency Message
NWS	National Weather Service
PAA	Public Alerting Application
PIO	Public Information Officer
PMO	Program Management Office
RHW	Radiological Hazard Warning
RMT	Required Monthly Test
SAME	Specific Area Message Encoding
SOG	Standard Operating Guidance
SOP	Standard Operating Procedure
SPW	Shelter-in-Place Warning
TOE	Telephone Outage Emergency
TSS	Technical Support Services
TSSF	Technical Support Services Facility
TTS	Text to Speech
VOW	Volcano Warning
WARN	Warning Alert and Response Network
WEA	Wireless Emergency Alert

ANNEX 2 – REQUIREMENTS FOR USING IPAWS

Before beginning the Memorandum of Agreement (MOA) process to become an IPAWS AA, consult with your state IPAWS representative to check eligibility.

IPAWS Portal

The IPAWS Portal explains the MOA process and requirements. Please visit this link for more information.

1. Complete IPAWS Online Course

All AAs are required to successfully complete the IPAWS Independent Study (IS)-247 course. This is an online course located on FEMA's Emergency Management Institute website. This course provides:

- The benefits of using IPAWS
- Skills to create appropriate, effective, and accessible AWN
- The importance of training, testing and exercising IPAWS
- Best practices for IPAWS

Once the course has been completed, course certification must be uploaded to the agency's profile via the IPAWS User's Portal.

Additional EMI Training

FEMA EMI course IS-251 provides AAs with guidance on:

- Developing effective policies, plans and procedures
- Defining the approval process
- Defining the importance of training, practice, and exercising IPAWS
- Illustrating IPAWS best practices and effectively using it to reach the public

Refer To

Use this link to access the IPAWS IS-247 course.

Use this link to access the IPAWS IS-251 course.

2. Choose IPAWS Compatible Software

The only cost to AAs is acquiring IPAWS compatible software (also known as alert origination software). IPAWS compatible software providers can be found at this link.

Choosing IPAWS Compatible software.

All the IPAWS compatible software systems perform the basic requirements to craft IPAWS AWN, but they vary in appearance and capabilities. When choosing IPAWS compatible software systems, you must:

- Determine agency requirements.
- Consider your budget.
- Research and review multiple IPAWS compatible software systems.

3. Maintain Active IPAWS Status

To remain in good standing with IPAWS, all AAs are required to perform MPDs in the IPAWS demo environment (also known as IPAWS TSSF). Issuing a live AWN does NOT fulfill this monthly requirement.

Scenario-Based MPDs

To increase your proficiency with issuing AWN, IPAWS TSS has created Scenario-Based MPDs that target the enhancement of AAs skills in AWN. The scenarios cover a variety of hazards and incidents. They are created to be flexible, scalable, and adaptable, which allows you to modify the scenarios to fit the needs of your jurisdiction(s). These scenarios include critical thinking questions to aid your responses to the exercise. Click here for more information on Scenario-Based MPDs.

ANNEX 3 – IPAWS RESOURCES

1. RESOURCES

This section provides several helpful resources that will assist with preparation and execution of AWN.

1.1. IPAWS TECHNICAL SUPPORT WEBSITE

The TSSF Resource Central contains resource materials such as Conducting WEA Tests, Drills, Workshops and Exercises, IPAWS MPD Scenarios, and the IPAWS Exercise Tool Kit.

Refer To

More information and resources regarding the TSSF can be found at the TSSF website

1.2. IPAWS PROGRAM PLANNING TOOLKIT

The Department of Homeland Security''s Science & Technology Directorate in coordination with FEMA developed the IPAWS Program Planning Toolkit to assist AAs with creating comprehensive plans and SOPs/SOGs.

Refer To

To access the IPAWS Program Planning Toolkit, please visit IPAWS Program Planning Toolkit | FEMA.gov

1.3. IPAWS AWN CHECKLIST

The checklist assists with reviewing and confirming that drafted EAS and WEA messages align with best practices for AWN.

Refer To

Use this link to access the AWN checklist.

1.4. IPAWS TIPS

The IPAWS PMO distributes "tips" to AAs, emergency managers, and software vendors. The tips cover a wide range of topics, including best practices and recommendations. All distributed tips are available on the IPAWS website.

Refer To

IPAWS Tips can be found online.

1.5. EXERCISE STARTER KIT

This kit provides stakeholders with ready-to-use materials and templates to develop, conduct and evaluate an exercise of any type or scale.

Refer To

The Exercise Tool Kit can be found at
Operational Coordination and Communications - EM Toolkits - Preparedness Toolkit (fema.gov)

1.6. ALERT VERIFICATION

Public Broadcasting Service Warning, Alert, & Response Network (PBS WARN) displays live, canceled, and expired WEA alerts throughout the nation. AAs can use it to verify that they have successfully sent an alert to the public.

Refer To

For more information on PBS WARN, please visit this link.

1.7. PUBLIC EDUCATION RESOURCES

Action Item

Follow FEMA on social media at: FEMA Blog on fema.gov, @FEMA or @FEMAEspanol on Twitter, FEMA or FEMA Espanol on Facebook, @FEMA on Instagram, and via FEMA YouTube channel.

Annex 4 - EVENT CODES

The following Event Codes are available to state, local, tribal and territorial AAs for use with IPAWS. Use of these Event Codes by AAs depends on established IPAWS permissions. The weather-related event codes, which are not listed here, are reserved for the NWS. The codes shown below may be used with EAS, WEA or NWEM except where indicated.

Event Code	Code Name	Pathway	Description	Example
ADR	Administrative Message	EAS & NWEM	A non-emergency message that provides updated information about an event in progress, an event that has expired or concluded early, pre-event preparation or mitigation activities, post-event recovery operations, or other administrative matters pertaining to the Emergency Alert System.	ADR can be used to inform the public of scheduled power outages in specific area(s) of its jurisdiction.
AVA	Avalanche Watch	EAS & NWEM	Conditions are favorable or expected but not imminent or occurring. The purpose of an Avalanche Watch is to warn the public that Avalanche Warning criteria are likely to be met in 24-48 hours.	AVA can be used when conditions have the potential to cause an avalanche and local authorities need to inform individuals to stay vigilant for further information or to evacuate immediately. Using AVA instead of AVW indicates that the avalanche is not certain to occur.
AVW	Avalanche Warning	EAS, WEA, & NWEM	A warning of imminent or occurring Avalanche activity.	AVW can be used when the avalanche is occurring, and local authorities need to inform those at risk to evacuate immediately. Using AVW versus AVA informs the public that the avalanche is taking place and to act quickly.
BLU	Blue Alert	EAS, WEA, & NWEM	A message issued by state and local authorities to warn the public when there is actionable information related to a law enforcement officer that is missing, seriously injured, or killed in the line of duty, or when there is an imminent, credible threat to an officer. A Blue Alert can quickly warn the public if a violent suspect may be in the community and provide instructions on what to do if the suspect is spotted and how to stay safe.	BLU can be used if an armed suspect has reportedly shot and injured an officer and fled the scene. Using BLU instead of LAE indicates involvement of law enforcement.

Event Code	Code Name	Pathway	Description	Example
CAE	Child Abduction Emergency	EAS, WEA, & NWEM	Based on established criteria, an emergency message, about a missing child believed to be abducted. A local or state law enforcement agency investigating the abduction will describe the missing child, provide a description of the suspect and/or vehicle, and ask the public to notify the requesting agency if they have any information on the whereabouts of the child or suspect	Authorized officials can use CAE to inform the public when a child is abducted. Sending an CAE increases awareness and the chances of a child being recovered. CAE is the only recommended event code to use in this situation.
CDW	Civil Danger Warning	EAS, WEA, & NWEM	A warning of an event that presents a danger to a significant civilian population. The CDW, which usually warns of a specific hazard and gives specific protective action, has a higher priority than the Local Area Emergency (LAE).	CDW can be used to inform public of contaminated water supply and imminent or in-progress military or terrorist attack. Public protective actions could include evacuation, shelter in place or other actions (such as boiling contaminated water or seeking medical treatment). Use CDW instead of LAE if the event is more detrimental to the population.
CEM	Civil Emergency Message	EAS, WEA, & NWEM	An emergency message regarding an in-progress or imminent significant threat(s) to public safety and/or property. The CEM is a higher priority message than the Local Area Emergency (LAE), but the hazard is less specific than the Civil Danger Warning (CDW).	CEM can be used to describe a change in the Homeland Security Alert System level in response to a terrorist threat. Use CEM instead of LAE if the event taking place is of greater importance.
DMO	Practice/Demonstration Warning	EAS, WEA, & NWEM	A demonstration or test message used for purposes established in state, including local, tribal, or territorial EAS plans. Purposes may include testing of a siren system or audio quality checks.	DMO can be used by authorized officials to test their NWEM capabilities or siren systems. Use RWT instead of DMO to test EAS/WEA and avoid disrupting the public.
EQW	Earthquake Warning	EAS, WEA, & NWEM	A warning of current or imminent earthquake activity. Authorized officials may recommend or order protective actions according to state law or local ordinance.	EQW can be used to inform the public of affected areas and measures to take for safety. If road damages have occurred, detour information can be provided for individuals that require or plan to travel into or away from the affected area. Use EQW instead of LAE to immediately alert the public of the exact event taking place.

Event Code	Code Name	Pathway	Description	Example
EVI	Immediate Evacuation	EAS, WEA, & NWEM	A warning where immediate evacuation is recommended or ordered according to state law or local, tribal, or territorial ordinance.	EVI can be used for authorized officials to recommend the evacuation of affected areas (county or statewide) due to an approaching tropical cyclone. In the event a flammable or explosive gas is released, authorized officials may recommend the evacuation of designated areas where casualties or property damage from a vapor cloud explosion or fire may occur. Use LAE instead of EVI if the agency does not plan to evacuate the entire county/state. Since the event code will scroll before the evacuation notification, LAE will lessen the chance of confusion and panic.
FRW	Fire Warning	EAS, WEA, & NWEM	A warning that indicates a spreading wildfire or structure fire threatens a populated area. Evacuation of areas in the fire's path may be recommended by authorized officials according to state law or local ordinance.	FRW can be used to warn the public that there is a fire in the affected areas and provide evacuation routes and shelter locations. Use FRW instead of LAE to convey the significance of a fire threat to the public.
HMW	Hazardous Materials Warning	EAS, WEA, & NWEM	A warning indicating the release of a non-radioactive hazardous material (such as a flammable gas, toxic chemical, or biological agent) that require the public to evacuate from the affected area (for an explosion, fire, or oil spill hazard) or shelter in place (for a toxic fume hazard).	HMW can be used during an oil spill, which could lead to fire or explosion. Authorized officials can block off an area and recommend the public evacuate or shelter in place if needed. Use HMW instead of LAE, EVI, or SPW to inform the public about a specific event taking place and provide recommendations.

Event Code	Code Name	Pathway	Description	Example
LAE	Local Area Emergency	EAS, WEA, & NWEM	An emergency message that defines an event that by itself does not pose a significant threat to public safety or property. However, the event could escalate, contribute to other more serious events, or disrupt critical public safety services. Instructions, other than public protective actions, may be provided by authorized officials.	LAE can be used during a disruption in water, electric or natural gas service, road closures due to excessive snowfall, or a potential terrorist threat where the public is asked to remain alert. LAE can also be used for a Silver Alert when an elderly, developmentally, or cognitively impaired person has gone missing and is determined to be at risk. Use LAE instead of CDW or CEM if the situation is not a high priority. Caveat: use LAE instead of EVI to avoid confusion or panic if not meant for the entire state/county.
LEW	Law Enforcement Warning	EAS. WEA, & NWEM	A warning of a bomb explosion, riot, or other criminal event (e.g., a jailbreak). An authorized law enforcement agency may blockade roads, waterways, or facilities, evacuate, or deny access to affected areas, or arrest violators or suspicious persons.	LEW can be used if a bomb threat is received during an event and local authorities are investigating the matter and law enforcement evacuates an area and establishes road blockages until “all clear” is received. Use LEW instead of LAE to inform the public that law enforcement officials are heavily involved in an ongoing situation.
NUW	Nuclear Power Plant Warning	EAS, WEA, & NWEM	A warning of an event at a nuclear power plant. Classified as a Site Area Emergency or General Emergency by the Nuclear Regulatory Commission (NRC). A Site Area Emergency is confined to the plant site, and no offsite impact is expected. Typically, a General Emergency is confined to a less than 10-mile radius around the plant.	NUW can be used to inform the public that an event is occurring at its community’s nuclear power plant. Authorized officials may recommend the evacuation or medical treatment of exposed persons in nearby areas. Using NUW instead of LAE, CDW or CEM keeps the focus on the nuclear power plant and the impacted community.

Event Code	Code Name	Pathway	Description	Example
RHW	Radiological Hazard Warning	EAS, WEA, & NWEM	A warning of the loss, discovery, or release of a radiological material.	RHW can be used if there is theft of a radioactive isotope used for medical, seismic, or other purposes, the discovery of radioactive materials, a transportation (e.g., aircraft, truck, or rail.) accident that may involve nuclear weapons, nuclear fuel, or radioactive waste. Authorized officials may recommend protective actions be taken if a radioactive hazard is discovered. Use RHW instead LAE, CDW, or CEM because it better conveys the seriousness of an event.
RMT	Required Monthly Test	EAS & WEA	A test message that is typically pre-scheduled and coordinated state- or region-wide on an annual basis. RMTs generally originate from a pre-designated local or state primary station, or a state emergency management agency. Broadcast stations and cable channels must relay RMTs. They must be conducted between 8:30 a.m. and local sunset during odd numbered months, and between local sunset and 8:30 a.m. during even numbered months. Received monthly, tests must be retransmitted within 60 minutes of receipt. Additionally, an RMT should not be scheduled or conducted during an event of great importance such as a pre-announced presidential speech, coverage of a national/local election, major local or national news coverage outside regularly scheduled newscast hours, or a major national sporting event such as the Super Bowl or World Series.	Designated RMT originating agencies can use EAS RMT for testing EAS Live message capability and audio. Work with local broadcasters prior to sending an EAS RMT. Use RMT instead of RWT if the agency wishes to preempt a public broadcast and administer future safety protocol information. Although RMT is available for WEA, it is not recommended for live testing. Rather, using RWT for WEA testing is the best option to avoid having to obtain an FCC Waiver.

Event Code	Code Name	Pathway	Description	Example
RWT	Required Weekly Test	EAS & WEA	A test message that consists, at a minimum, of the header and end-of-message tones. Though an RWT does not need an audio or graphic message announcing the test, many stations provide them as a courtesy to the public. In addition, television stations are not required to transmit a video message for weekly tests. RWTs are scheduled by the station on random days and times during weeks when there is no Required Monthly Test scheduled. Broadcast and cable operators generally do not relay incoming RWTs.	EAS RWTs may originate from state and local alerting authorities to confirm the operational status of their IPAWS live alerting software configuration without interrupting broadcast or cable programming. Use RWT instead of RMT if the agency does not plan to interrupt the public. WEA RWTs could be used to test the WEA Live message capability under WEA Test without a waiver from the FCC. Individuals must opt in to receive the RWT. Use RWT instead of RMT to comply with the FCC rule and avoid obtaining a waiver.
SPW	Shelter in Place Warning	EAS, WEA, & NWEM	A warning of an event where the public is recommended to shelter in place (go inside, close doors and windows, turn off air conditioning or heating systems, and turn on the radio or TV for more information).	SPW can be used by authorized officials if there is a release of hazardous materials and toxic fumes, or radioactivity may affect designated areas. It is also used when evacuating from an affected area will cause grave danger. Use SPW instead of LAE, CDW, or CEM to indicate the importance of the specified warning.
TOE	911 Telephone Outage Emergency	EAS, WEA, & NWEM	An emergency message that defines a local or state 911 telephone network outage by geographic area or telephone exchange.	Authorized officials can use TOE to provide alternate phone numbers to reach 911 or dispatch personnel when 911 lines are down. Use TOE instead of LAE to notify the public 911 telephone outage and provide further information.
VOW	Volcano Warning	EAS, WEA, & NWEM	A warning of current or imminent volcanic activity. Authorized officials may recommend or order protective actions according to state law or local ordinance.	Authorized officials can use VOW to inform the public of a volcanic eruption and provide evacuation routes and shelter locations. Use VOW instead of LAE to alert the public of volcanic activity.