

IPAWS, EAS and WEA

Tips and Quirks

for Emergency Managers

These tips and quirks are intended to help emergency managers using the Integrated Public Alert & Warning System (IPAWS), Emergency Alert System (EAS), and Wireless Emergency Alerts (WEA) systems, and avoid unexpected results. IPAWS, EAS and WEA are extremely effective for alerting the public. However, these systems sometimes alert more people (or different people) than an emergency manager may expect. Each of the systems has unique quirks and obscure interactions.

Key Points

When should I issue an alert or warning?

According to your local alert and warning plan.

What should I do when something unexpected happens with an alert or warning?

Stop! Sending more alerts interrupts news media broadcasting correct information, and annoys the public even more. Notify news media contacts about the problem and corrected information.

Which alert or warning system should I use?

Not every incident requires using every alert or warning system. Choose the best combination of systems based on the severity of the hazard, urgency of notification needed, and size of the area/population being notified.

What IPAWS quirks should I be aware?

Do not use live event codes for practice or drills. Assume any and all IPAWS messages could be distributed to the public. Use the cancel function. Do not send a cancel message.

What Emergency Alert System (EAS) quirks should I be aware?

It is unpredictable if EAS outlets receive an alert message first via CAP data or Over-the-Air distribution channels. Over-the-Air distribution does NOT include the full message from CAP, only the EAS short header and audio message.

What Wireless Emergency Alerts (WEA) quirks should I be aware?

WEA is designed to get people's attention anywhere, even when they are asleep. The public has a much lower tolerance for interruptions on their personal mobile devices than other alerting channels.

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Detailed Tips and Quirks

When should I issue an alert or warning?

1. According to your local public alert and warning plan. These tips defer to the expertise and emergency manager's assessment when to issue an alert or warning.
2. Use the public alert and warning systems to get the public's attention, provide some limited information immediately, and direct the public to other media sources for more details and supplemental information. Alert and warning systems do not replace local news media and other information distribution channels.
3. There is some disagreement how and when All-clear messages should be sent. Generally, EAS and WEA are not used for All-clear messages. However, as an example, in some communities when emergency warning sirens falsely sound, they send an All-clear advisory message. Do not use a warning-level event code for All-clear advisory messages. If an All-clear advisory message is sent, use an advisory-level event code. Refer to your local public alert and warning plan how to handle All-clear advisory messages.

What should I do when something unexpected happens with an alert or warning?

1. Stop! Whether it is a system problem or an operator problem, stop trying to send more alerts or warnings through that system. Trying to resend the original alert multiple times, or sending "correction" alerts always makes things worse. Contact local news media directly, and use other channels for corrections. Sending more alerts interrupts news media broadcasting correct information, and annoys the public even more.
2. When using IPAWS (for either EAS or WEA), use the cancel function. Do not send a cancel message. The cancel function helps stop the problem from getting worse, but it's probably already too late to prevent the problem.
3. If the alert or warning is still critical:
 - a. Contact your backup warning agency (e.g. go up to a State EOC, go down to a local EOC, go sideways to a neighboring EOC) according to your warning plan. A different set of eyes and a different set of equipment may see what went wrong.
 - b. Notify the local news media directly using other contact channels.

Which alert or warning system should I use?

1. Different alert and warning systems are suitable for different levels of incident severity. Not every incident requires using every alert or warning system. Choose the best combination of systems based on the severity of the hazard, urgency of notification

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needed, and size of the area/population being notified. For example, the New York City, Office of Emergency Management ranks its alerting communication pathways:

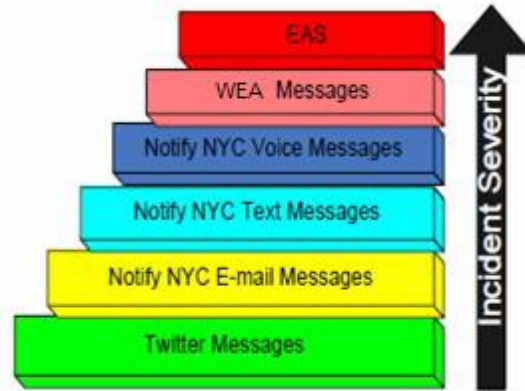


Figure 1 NYC OEM's Communication Pathways Ranked by Severity (2012)

2. In addition to using public alerting and warning systems, notify local news media through separate, direct channels, i.e. email, FAX, news bulletin. Supplemental and follow-up details, such as shelter locations, detailed maps, and other emergency government information are best distributed through local news media and other distribution channels.
3. Emergency managers are strongly encouraged to also establish an official web site or online emergency information source where the public (and local news media) can verify alerts and warnings. Also update the official site when an erroneous or false alert is issued, and when an alert is cancelled.

What IPAWS quirks should I be aware?

1. Assume any and all IPAWS messages could be distributed to the public. Do not use live event codes for practice or drills. Even if an emergency manager blocks other distribution channels, the risk a message could be accidentally distributed to the public is too great.
2. The "time period" of a message is interpreted as the message expiration time, not the incident duration. Choose time periods based on the next expected message update, not how long an incident is expected to last. Generally, CAP and EAS messages use time periods (message expiration times) between 15 minutes and 6 hours, with 1 hour being a reasonable default time period and 15 minutes for short-fused warnings. WEA messages are for immediate or imminent warnings, and should not be longer than 2 hours.

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3. “Cancelling” an IPAWS message does not recall any messages already transmitted. For example, if an AMBER alert is issued with a 24-hour expiration, even if the child is found in 1 hour and cancel the CAP message, previously transmitted messages would continue circulating until the 24-hour expiration time.
4. “Updating” an IPAWS message does not change previously transmitted messages, or cause new EAS or WEA transmissions. Updated IPAWS messages may change on-line social media warning maps (i.e. Google, Facebook, etc.) and future transmissions.
5. Avoid sending new IPAWS messages about the same incident before the previous message about the same incident expires. The use of long message time periods, and sending multiple messages about the same incident causes obsolete and overlapping warnings to appear in on-line social media warning maps (i.e. Google, Facebook, etc.)

What Emergency Alert System (EAS) quirks should I be aware?

1. When an IPAWS message contains neither an audio file, <description> or <instruction>; a “silent” EAS message is generated. A silent EAS message does not contain any audio message information. But it still interrupts programming with the EAS data bursts and Attention Signal on radio/TV, and displays the EAS short header (originator code, event code, location codes, and time period) on cable/wireline and TV programming. Even when only a WEA message is intended to be sent, always provide at least a brief <description> in the CAP message in case the message is accidentally distributed through unexpected alert or warning channels.
2. EAS outlets receive the alert message through both CAP data and Over-the-Air distribution channels. The Over-the-Air distribution daisy-chain was the original EAS distribution channel, and still used in case there is damage to the CAP distribution channels. However, it is unpredictable via which distribution channel an EAS outlet will receive a particular message first. Even if it received the last message through one distribution channel, an EAS outlet could receive the next message through the other distribution channel first.
 - a. CAP distribution includes the full-text of the CAP message, and recorded audio file (MP3 quality) if retrieved. Cable and TV text crawls display both the EAS short header translation plus the CAP message text (description/instruction).
 - b. Over-the-Air distribution includes only the EAS short header information and a transmitted (AM/FM quality) audio message. Over-the-Air distribution does NOT include the full message text from the CAP message. When received over-the-air, cable and TV text crawls display only the EAS short header translation.

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- c. EAS equipment at media outlets automatically de-duplicates messages received through both EAS and CAP distribution channels. Only one copy (usually the first received) of a message is played on the air, no matter how many copies of the same message are received. The duplicate check is if both messages have identical EAS headers (same originator, same event code, same locations and same time period). However, resending a message changes the time in the EAS header, even if the audio and other EAS header information is the same. A message with a different time is considered a new message, and results in duplicate sounding messages being played on the air.
3. The event translation in the EAS short header text is determined only by the event code. The EAS header translation is always shown in video text crawls. Do not assume the public will hear the audio message or see the additional CAP <description> and <instruction> text. Choose the most appropriate EAS event code for an alert, recognizing the EAS short header code translation (with an originator code, event code, location codes, and time period) may be the only text crawl seen by the public.
 - a. Do not use immediate action or warning-level event codes for advisory or watch-level messages. Using warning-level event codes for advisory messages tends to cause unintended public concern (and agitation with officials), when only the EAS short header text is seen by the public. The audio message and CAP text may include qualifiers and explanations, but those are not always heard or seen by the public.
4. EAS broadcasts are based on the Local Area EAS boundary (or county (FIPS code) of the broadcast tower or cable head-end), not the location of public's radio/TV receiver. Nevertheless, EAS uses broadcasting, cable/wireline and satellite transmission and may interrupt programming in a broader area beyond the county or Local Area EAS boundaries. Some cable/wireline systems may provide franchise-level alerting capabilities, but those capabilities are not available in all areas.
5. The quality of the EAS audio varies on different outlets. For the best audio, attach a recorded audio file (or multiple audio files in different languages) as part of the CAP/IPAWS message.
 - a. Even when a recorded audio file is attached to a CAP message, if the EAS equipment cannot retrieve or process the audio file for whatever reason, the EAS equipment generates a computer text-to-speech (TTS) voice version of the audio message. Computer TTS will mispronounce words, and is very sensitive to abbreviations, capitalization and punctuation in the text. Computer TTS will read

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extra characters as individual words, e.g. “*** UPDATE ***” read as “asterisk, asterisk, asterisk, update, asterisk, asterisk, asterisk.”¹

- b. A few EAS participants may re-record the audio message before retransmission. At its discretion, an EAS participant may translate the message into a different language for its audience, or may use its on-air talent for the audio. This is voluntary, and rarely done, depending on staff availability. Do not depend on EAS participants re-recording or translating audio messages.
 - c. When received via the Over-the-Air distribution channel, the audio quality is no better than the worst upstream channel (AM/FM/DTV/NWR/Public Safety Band) in the EAS daisy-chain. The audio message might be either the recorded audio, a text-to-speech audio or a re-recorded audio version depending what an upstream EAS daisy-chain source retransmits.
6. Only one EAS message at a time can be handled by older EAS equipment, especially via the Over-the-Air EAS daisy-chain distribution channel. Wait at least 15 minutes between sending EAS messages. Older equipment may ignore other EAS messages (except an EAN) while processing an EAS message. Newer EAS/CAP equipment can queue multiple CAP messages, but not all EAS outlets have upgraded to the latest EAS/CAP equipment.
 7. EAS messages can interrupt both cable and TV stations carrying live coverage, including some cable systems which also interrupt local TV stations. Avoid sending EAS messages within 15 minutes of live news conferences about an incident.

What Wireless Emergency Alerts (WEA) quirks should I be aware?

1. When the <CMAS text> field (WEA Text) is not included in a CAP message, a default text message based on the event code is generated. The default text message is very generic. Even when only a EAS message is intended to be sent, always provide at least a brief <CMAS text> in the CAP message in case the message is accidentally distributed through unexpected alert or warning channels.
2. Each 90-character WEA message is a stand-alone broadcast. WEA broadcasts do not guarantee delivery of every message to every mobile device in an area. Only some messages may be received by some mobile devices, and messages may be displayed to the user out of order.
3. WEA broadcasts continue to be re-transmitted until the message expires or cancelled through IPAWS. Mobile devices de-duplicate messages, and only display an WEA message once. However, a mobile device entering the alert area (or switching to a

¹ “Tips for creating understandable Emergency Alert System and Common Alerting Protocol messages for the Integrated Public Alerting & Warning System (IPAWS).” http://www.donelan.com/EAS-CAP_Message_Tips.pdf

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tower in the alert area) for the first time may receive an unexpired WEA message long after the initial message was released. Do not use long expiration periods for WEA messages, to avoid obsolete information circulating long after the initial alert.

Generally, WEA messages are only for immediate/imminent emergencies, and should not use expiration periods longer than 2 hours.

4. WEA cell broadcasts are based on the location of the cell towers, not the mobile device. Cell broadcast coverage is a theoretical engineering calculation, not an exact map. Mobile devices beyond the alert area may receive cell broadcasts from distant cell towers from an alert area, even if the cell tower is further away than another local tower. Likewise, mobile devices inside the alert may not receive WEA messages if they are not receiving broadcasts from a cell tower included in the alert.
5. WEA may be implemented on a county-by-county basis (FIPS code), or on a tower-by-tower basis (polygon) by different cell providers, even in the same geographic area. Depending on the provider used for a mobile device, some may broadcast WEA messages through out an entire county, while others may broadcast WEA messages inside a polygon area crossing county boundaries. Different cell providers may also interpret either county or polygon boundaries over/under a tower's coverage area, i.e. some use only towers inside an alert area or others also use towers outside the alert area with (theoretical) coverage in alert area.
6. Unlike EAS messages, which alert (interrupt) people only while they are awake and watching TV or listening to radio, WEA messages interrupt people anywhere, even when they are asleep. This gives emergency managers tremendous power to alert people almost anywhere, anytime. It also means the public can become extremely annoyed by "unimportant" alerts which don't affect them personally. Experience from National Weather Service's use of WEA for weather warnings demonstrated the public has a much lower tolerance for interruptions on their personal mobile devices than other alerting channels. Blackout periods between 11pm and 7am are suggested, and use WEA (and NOAA Non-Weather Emergency Messages) only for immediate, extreme warnings late at night.