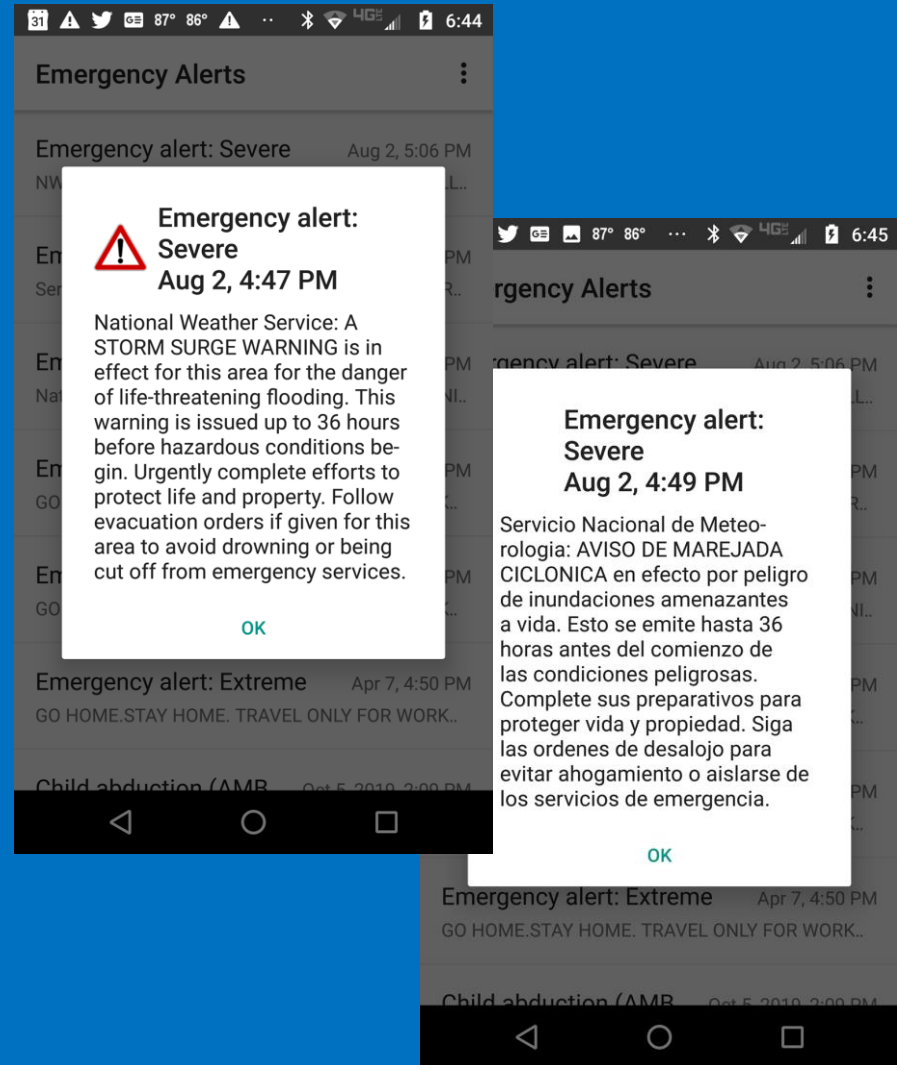# Mobile Alerting
in the United States

May 11, 2023

Mike Gerber
United States National Weather Service
Office of Dissemination
Silver Spring, MD

Wireless Emergency Alerts (WEA)

WEA is a U.S. public safety system that allows authorized agencies to geographically target emergency messages to consumer cell phones
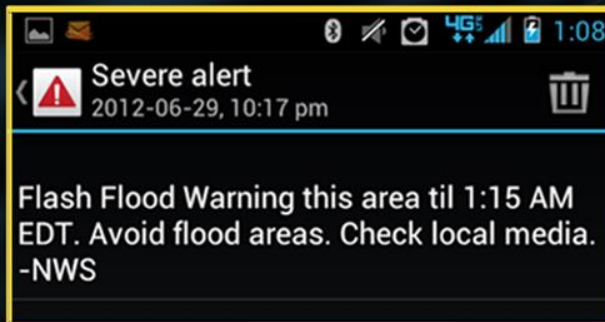

⚠ EMERGENCY ALERTS   ✕

Emergency Alert
FAST MOVING BRUSH FIRE
BETWEEN SANTA PAULA, VENTURA,
OJAI - GO TO
READYVENTURACOUNTY.ORG F

1,600 public safety agencies in U.S. authorized to use WEA

WEA 10th Anniversary

Celebrating 10 years of life-saving **Wireless Emergency Alerts**

10 YEARS ANNIVERSARY

Severe alert
2012-06-29, 10:17 pm

Flash Flood Warning this area til 1:15 AM EDT. Avoid flood areas. Check local media. -NWS

2012

EMERGENCY ALERTS

Emergency Alert
National Weather Service: A FLASH FLOOD WARNING is in effect for this area until 630 PM EDT. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

2022

Improvements over the past 10 years:

▶ Alerts can be delivered within one-tenth mile of warning area. Previously entire county alerted.

▶ New impact-based warnings only trigger alerts for the worst flash floods & thunderstorms.
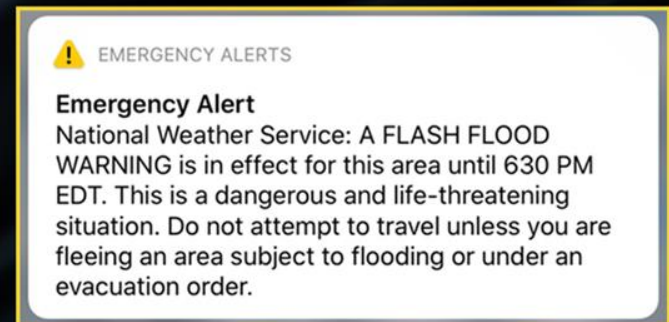
▶ Character limit upgraded from 90 to 360. Provides more info and life-saving actions.

▶ Spanish language alerts added.

NWS WEA Activation

NWS WEA Activation Schedule	
Tornado Warning	- New warning - Threat is upgraded to catastrophic - Any additional updates with catastrophic
Flash Flood Warning	- New warning **if** threat tag is considerable or catastrophic - Threat is upgraded to considerable or catastrophic
Severe Thunderstorm Warning	Activate for first occurrence (i.e. new or updated warning) of a <u>destructive threat</u>
Hurricane/Typhoon Warning	Activate for new warning
Storm Surge Warning	Activate for new warning
Extreme Wind Warning	Activate for new warning
Tsunami Warning	Activate for new warning
Dust Storm Warning	Activate for new warning.
Snow Squall Warning	Activate for first occurrence (i.e. new or updated warning) where impact is "Significant"

See NWS 90 and 360 character WEA message templates at www.weather.gov/wrn/wea360

NWS WEA Message Templates Based on Social Science

SOURCE
Say who the message is from

THREAT
Describe the flooding event and its impacts

LOCATION
State the impact area boundaries in a way that can be understood (for example use street names, landmarks, natural features, and political boundaries)

GUIDANCE/TIME
Tell people what protective action to take, the time when to do it, how to accomplish it, and how doing it reduces impacts

EXPIRATION TIME
Tell people when the alert/warning expires and/or new information will be received

EXAMPLE

SOURCE — GUIDANCE/TIME — THREAT

LCPD Check and monitor local media now Explosion at Superior dam Potential damage and flooding in Sherman Heights

Message expires 8:00 AM PDT

EXPIRATION TIME — LOCATION

TEMPLATE

[Insert title and organization of a local, familiar, **SOURCE** authoritative message source] **Check and monitor** *GUIDANCE/TIME*

local media now [insert description of event, dam *THREAT*

name, and threat here] **in** [insert location of threat *LOCATION*

here] **Message expires** [insert time here] *EXPIRATION TIME*
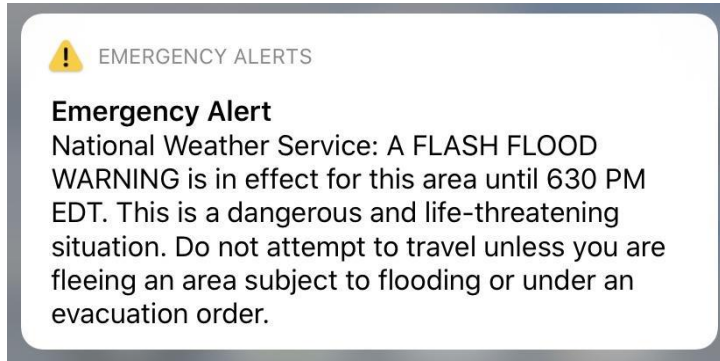
Example

National Weather Service: TORNADO WARNING in this area until 12:15PM CST. Take shelter now in a basement or an interior room on the lowest floor of a sturdy building. If you are outdoors, in a mobile home, or in a vehicle, move to the closest substantial shelter and protect yourself from flying debris. Check media.

Source: PREPTalks Discussion Guide - Modernizing Public Warning Messaging, Dr. Dennis Mileti
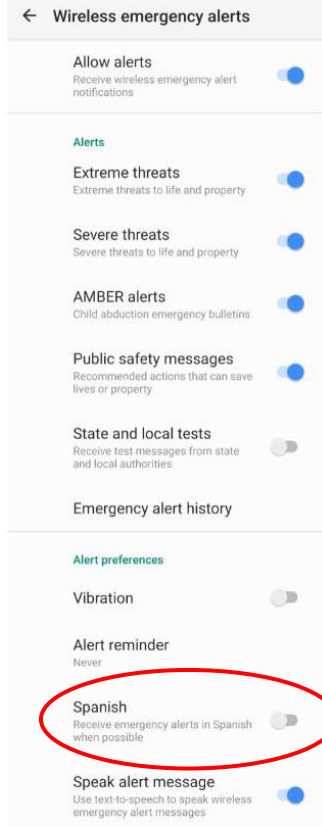www.fema.gov/blog/preptalks-dr-dennis-mileti-modernizing-public-warning-messaging

WEA 2.0: 360 Character and Spanish WEA

Message length improvement. Alerting authority can create 360 character WEA for WEA 2.0 & newer phones on a 4G or newer network. Otherwise, the alerting authority's 90 Character WEA is displayed.
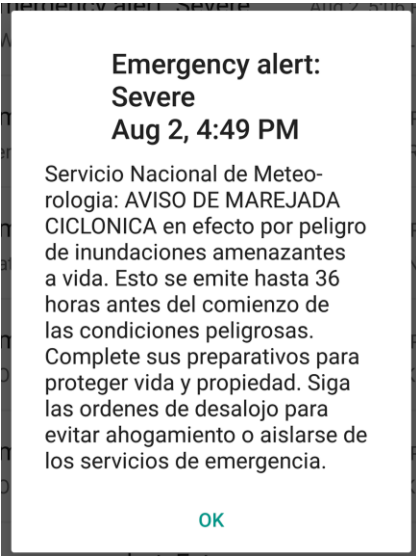
> ⚠️ EMERGENCY ALERTS
>
> **Emergency Alert**
> National Weather Service: A FLASH FLOOD WARNING is in effect for this area until 630 PM EDT. This is a dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

Android WEA Settings

← Wireless emergency alerts

Allow alerts
Receive wireless emergency alert notifications

Alerts

Extreme threats
Extreme threats to life and property

Severe threats
Severe threats to life and property

AMBER alerts
Child abduction emergency bulletins

Public safety messages
Recommended actions that can save lives or property

State and local tests
Receive test messages from state and local authorities

Emergency alert history

Alert preferences

Vibration

Alert reminder
Never

Spanish
Receive emergency alerts in Spanish when possible

Speak alert message
Use text-to-speech to speak wireless emergency alert messages

Emergency alert: Severe
Aug 2, 4:49 PM

Servicio Nacional de Meteo-rologia: AVISO DE MAREJADA CICLONICA en efecto por peligro de inundaciones amenazantes a vida. Esto se emite hasta 36 horas antes del comienzo de las condiciones peligrosas. Complete sus preparativos para proteger vida y propiedad. Siga las ordenes de desalojo para evitar ahogamiento o aislarse de los servicios de emergencia.

OK

Spanish WEA. Available on WEA 2.0 & newer phones when configured for Spanish WEA and if alerting authority creates Spanish version of the WEA.

See NWS 90 and 360 character WEA message templates at www.weather.gov/wrn/wea360
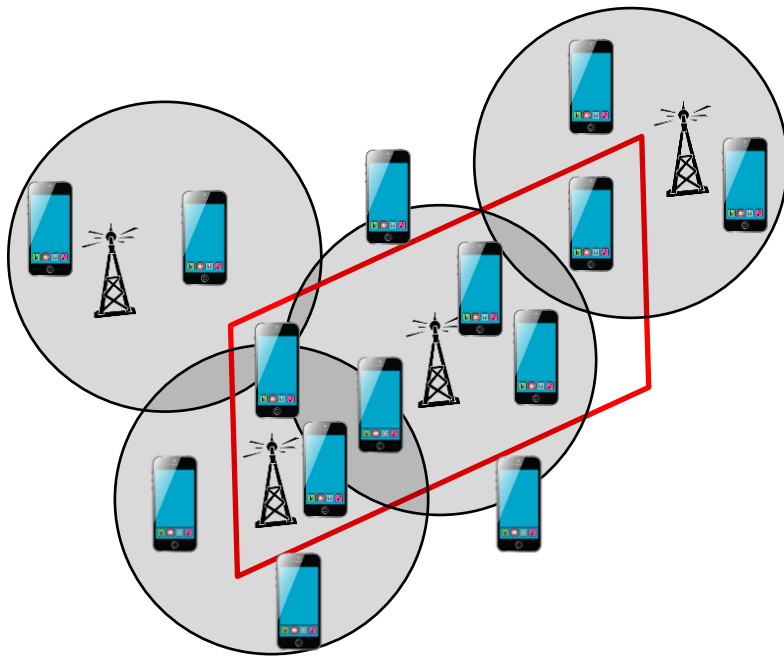
IOS WEA Settings

GOVERNMENT ALERTS

AMBER Alerts

Emergency Alerts   On >

Public Safety Alerts

< General   **Language & Region**

iPhone Language   English >

Other Languages...

WEA Geotargeting

WEA is a cell broadcast from cell antennas in and around the alert area
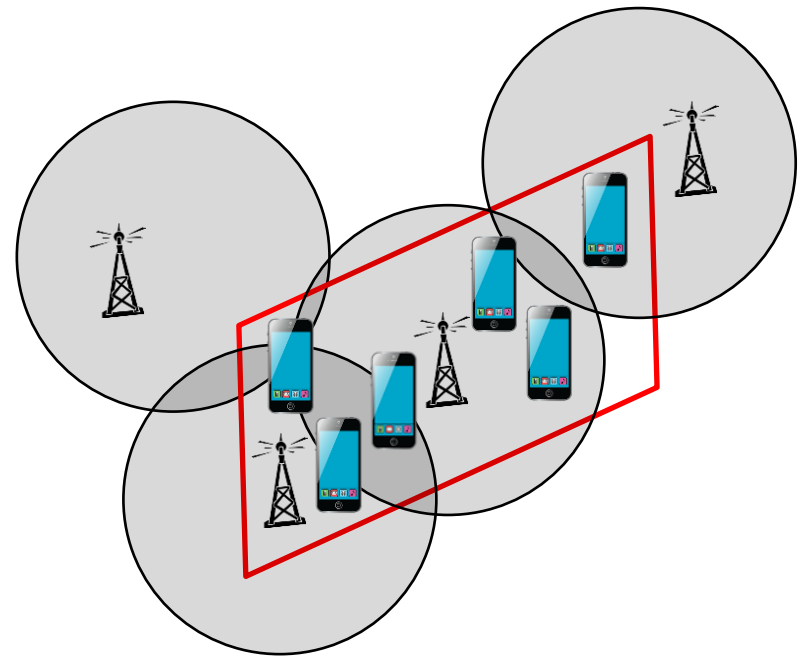
Geotargeting prior to WEA 3.0

- Overshoot where WEA presented even if cell phone is outside alert polygon

WEA 3.0 geotargeting

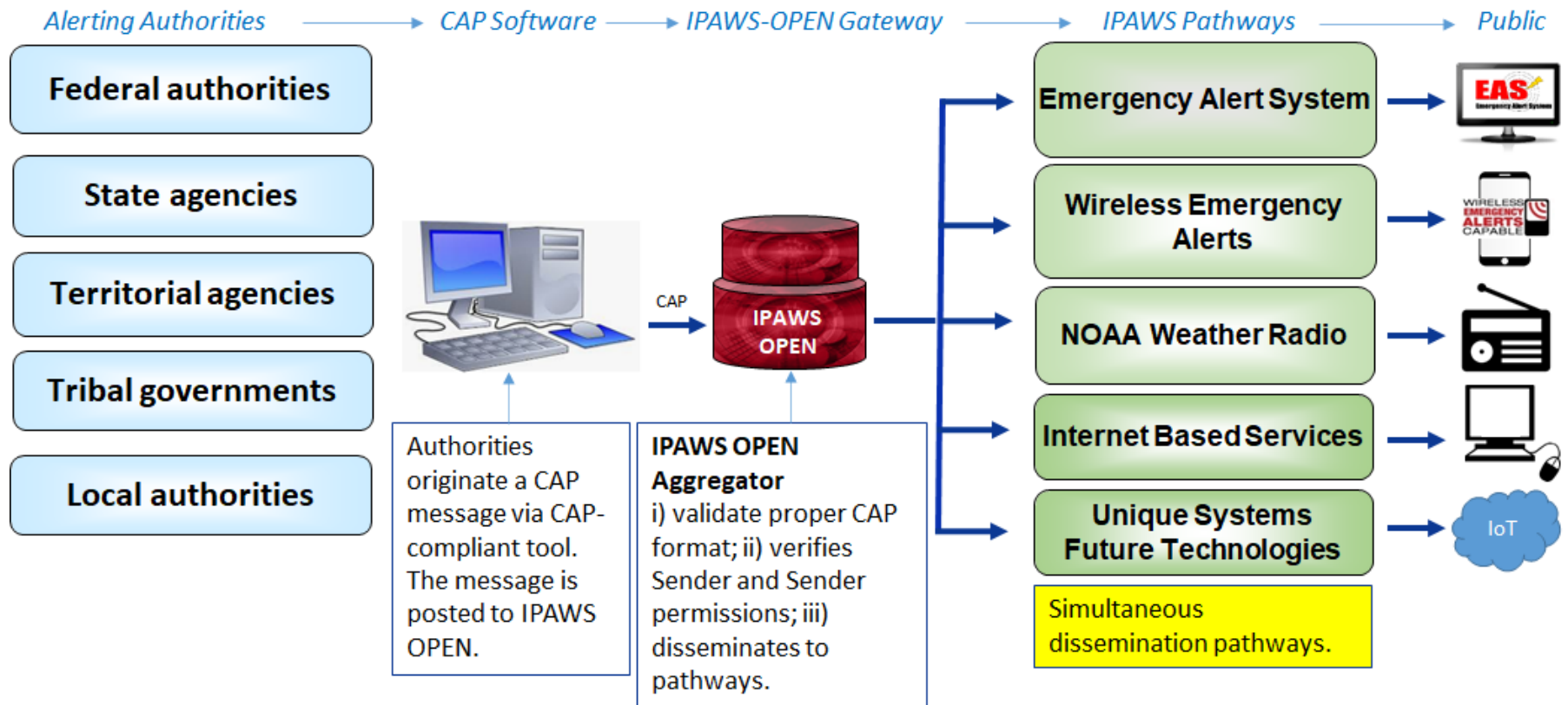- WEA presented only if cell phone within .1 (one-tenth) mile of alert polygon

WEA is a Partnership Between Government and Industry

- Established by act of U.S. Congress in 2008. Became operational in 2012.

- Federal Communications Commission (FCC) writes the rules for WEA based on input from public safety agencies, wireless industry, and other public input

- Federal Emergency Management Agency (FEMA) authorizes public safety agencies to send alerts to their Integrated Public Alert and Warning System (IPAWS)

- Wireless industry writes the industry standards for WEA, receives alerts from IPAWS, and broadcasts WEA them based on rules set forth by the FCC

Flow of Alert from Public Safety Agency to Cell Phone

Alerting Authorities → CAP Software → IPAWS-OPEN Gateway → IPAWS Pathways → Public

- Federal authorities
- State agencies
- Territorial agencies
- Tribal governments
- Local authorities

CAP

IPAWS OPEN

Authorities originate a CAP message via CAP-compliant tool. The message is posted to IPAWS OPEN.

IPAWS OPEN Aggregator i) validate proper CAP format; ii) verifies Sender and Sender permissions; iii) disseminates to pathways.

- Emergency Alert System
- Wireless Emergency Alerts
- NOAA Weather Radio
- Internet Based Services
- Unique Systems Future Technologies

Simultaneous dissemination pathways.

Common Alerting Protocol (CAP)

XML-based industry standard means low cost of entry for commercial developers

<event>Flash Flood Warning</event>

<urgency>Immediate</urgency>

<severity>Severe</severity>

<certainty>Likely</certainty>

<effective>2010-06-03T14:00:00-05:00</effective... 17:00:00-05:00</expires>

<senderName>NWS Memphis (Western Tenn... ...kansas and Northern Mississippi)</senderName>

<headline>Flash Flood Warning issued June 03 at 2:00PM CDT valid until June 03 at 5:00PM CDT by NWS Memphis</headline>

<description>DOPPLER RADAR ESTIMATES 1 TO 3 INCHES OF RAINFALL HAS OCCURRED OVER THE PAST HOUR…</d...

<instruction>MO... ...CCUR IN AUTOMOBILES. NEVER DRIVE YOUR VEHICLE INTO AREAS WHERE... ...THE ROADWAY…TURN AROUND...DONT DROWN</instruct...

<polygon>36.20,-88.93 36.18,-88.91 36.05,-88.84 35.99,-89.17 35.99,-89.19 35.98,-89.21 35.94,-89.30 36.17,-89.31 36.21,-89.04 36.20,-88.96 36.22,-88.95 36.20,-88.93</polygon>

Alert information at its most granular levels

GIS Friendly

https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/public-safety-officials/sign-up

FEMA Integrated Public Alert and Warning System Fact Sheet

Sign Up to Use IPAWS to Send Public Alerts and Warnings

A federal, state, local, tribal or territorial Alerting Authority that applies for authorization to use the Integrated Public Alert and Warning System (IPAWS) is designated as a **Collaborative Operating Group (COG)**. Follow these steps to obtain access to IPAWS for COG-to-COG messaging and permission to disseminate your alerts to the public.

Before beginning the below process, consult with your State IPAWS representative, typically found in the State Emergency Management Agency, for your ability to become an IPAWS alerting authority.

Step 1: Complete IPAWS Web-Based Training

- FEMA's Emergency Management Institute (EMI) offers the independent study course IS-247, *Integrated Public Alert and Warning System for Alert Originators*. Complete this course and submit the training certificate to the IPAWS Program Management Office at ipaws@fema.dhs.gov.

- EMI also offers course IS-251, *Integrated Public Alert and Warning System for Alerting Administrators*. This course is required to obtain public alerting authority.

Step 2: Select IPAWS-Compatible Software

- Confirm with your potential or current software provider that they can meet your public alerting needs. Find a list of Alert Origination Software Providers (AOSP) who have demonstrated their IPAWS compatibility on this page.

- Our AOSP Webinar Series includes demonstrations by some software providers. Webinars are at this link.

- Acquire your IPAWS-compatible alert origination software and AOSP training before proceeding to the next step.

Step 3: Apply for a Memorandum of Agreement (MOA) with FEMA

- Request the MOA application from the IPAWS office. Complete the application and return via email.

- You will receive an email from the IPAWS office containing your MOA for signature, public alerting application, COG Identification, COG name and additional instructions. Sign and return the MOA to the IPAWS office.

- Your MOA will be reviewed and signed by FEMA authorizing officials and returned to you. You will receive your digital certificate, and a separate email with the password. Contact your AOSP to load your digital certificate and credentials into your alert origination software.

FEMA

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Sign Up to Use IPAWS to Send Public Alerts & Warnings

By completing the above steps, your organization will be able to exchange messages between COGs but is not yet able to alert the public via IPAWS. Continue with Step 4 for public alerting. These steps can be completed concurrently with the COG application.

Step 4: Apply for Public Alerting Permission

- Complete and submit the public alerting application to your designated state official (the IPAWS office will provide contact information).

- Once your state contact returns the signed public alerting application, please send it to the IPAWS office (some states' officials will send the application directly to IPAWS. Check with your state Point of Contact for guidance).

- Complete course IS-251, *IPAWS for Alerting Administrators*. Submit your certificate of completion to the IPAWS office.

Once all these steps are completed, the IPAWS PMO will confirm you are an IPAWS Alerting Authority and enable you to send alerts to the public.

For more information visit https://www.fema.gov/ipaws. Contact the IPAWS Program Management Office at ipaws@fema.dhs.gov.

The Integrated Public Alert & Warning System (IPAWS) is FEMA's national system for local alerting that provides authenticated emergency and life-saving 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.

Learn more at fema.gov

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Alert Origination Software Providers

The IPAWS website lists over two dozen alert origination software providers.

FEMA advises local EMAs to first contact their state, since some states may have specific requirements for or be able to assist with the cost of alert origination software.

Reach out to IPAWS Customer Support at IPAWS@fema.dhs.gov for further guidance.

FEMA Fact Sheet: Demonstrated IPAWS Capabilities – AOSP Vendor List

Demonstrated IPAWS Capabilities – Alert Origination Software Providers

The IPAWS Office does not certify or endorse any vendor product. This list includes Alert Origination Software Providers (AOSP) who voluntarily demonstrated their IPAWS capabilities. Demonstrated capabilities may or may not include WEA 2.0/3.0 capabilities. Please contact your vendor to inquire about your product's WEA capabilities.

- AlertSense
- Alertus
- Asher Group – Hyper Reach
- ATI Systems – MassAlert
- Blackberry – AtHoc IWS
- Blackboard – Blackboard Connect
- Buffalo Computer Graphics – DisasterLAN
- CivicReady
- Comlabs – EMNet
- Desktop Alert
- Everbridge
- Genasys
- GSS Alert Studio – ALERT FM
- HipLink
- HQE Systems – SiRcom SMART Alert
- Information Logistics – IRIS/HELP
- Inspiron Logistics – WENS
- Juvare – WebEOC
- KDEE Technology LLC – On-The-Go Alerting
- Monroe Electronics – DAS-EOC
- Motorola Solutions – VESTA
- Nixle
- OnSolve – CodeRED
- Rave Mobile Safety
- Regroup Mass Notifications
- Singlewire – InformaCast
- SwiftReach – Swift911
- Titan HST

See IPAWS website for latest list

FEMA

January 2022

Wireless Industry Information for Alert Originators

Two Page Fact Sheet

WEA 3.0 Practical Hints
for Alert Originators
(more advanced)

Get both documents at access.atis.org/apps/group_public/download.php/61040/ATIS-0700049.zip

WEA Resources

WEA Information	
NWS WEA FAQ	weather.gov/wrn/wea
NWS WEA Message Templates	weather.gov/wrn/wea360
FEMA WEA FAQ	fema.gov/frequently-asked-questions-wireless-emergency-alerts
FCC WEA FAQ	fcc.gov/consumers/guides/wireless-emergency-alerts-wea
Wireless Industry WEA Page	ctia.org/wireless-emergency-alerts
Wireless Industry Info for Alert Originators	access.atis.org/apps/group_public/download.php/61040/ATIS-0700049.zip

WEA Compatibility by Carrier and Device	
AT&T	att.com/support/article/wireless/KM1009041
T-Mobile	https://www.t-mobile.com/responsibility/consumer-info/safety/wireless-emergency-alerts
Verizon	verizonwireless.com/support/wireless-emergency-alerts-compatible-devices
U.S. Cellular	uscellular.com/support/wireless-emergency-alerts

Thank you!