



The Integrated Public Alert and Warning System (IPAWS)

Get Alerts, Stay Alive

IPAWS 101



FEMA

March 31, 2015

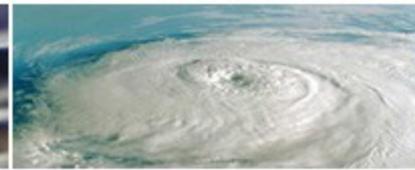
Table of Contents

- ✓ About IPAWS
- ✓ IPAWS Components
 - Emergency Alert System (EAS)
 - Wireless Emergency Alerts (WEA)
 - National Weather Service (NWS) tools
 - Internet Services
 - Local, Unique, and Future Technologies
- ✓ Adoption of IPAWS
- ✓ IPAWS Resources
- ✓ IPAWS in Action

Go to www.fema.gov/informational-materials to learn more about how IPAWS is being used across the nation to save lives and protect property



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About IPAWS



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Presidential Direction

Executive Order 13407 - Public Alert and Warning System

- “It is the policy of the United States to have an effective, reliable, integrated, flexible, and comprehensive system to alert and warn the American people in situations of war, terrorist attack, natural disaster, or other hazards to public safety and well-being (public alert and warning system), taking appropriate account of the functions, capabilities, and needs of the private sector and of all levels of government in our Federal system, and to ensure that under all conditions the President can communicate with the American people.”

1995 Presidential Memorandum

“Emergency Alert System (EAS) Statement of Requirements”

- The national level EAS must be: Fully integrated from the national to local level, yet capable of independent local (Priority Two) and state (Priority Three) operations.

47 Code of Federal Regulation (CFR)

- Part 10 (Wireless Emergency Alerts) – Serve as the Federal Alert Aggregator
- Part 11 (Emergency Alert System) - Activation of the “National EAS” for a Presidential Alert



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The Evolution of Emergency Alerting



Originally called the “Key Station System,” the **CON**trol of **E**lectromagnetic **R**adiation (CONELRAD) was established in August 1951.

Participating stations tuned to 640 & 1240 kHz AM

Initiated a special sequence and procedure designed to warn citizens.

Established to address the nation through audible alerts.

Did not allow for targeted messaging.

Upgraded in 1976 to provide more accurate alert receptions.

Designed to provide the President with an expeditious method of communicating

Later expanded for use during peacetime at state and local levels.

Coordinated by the FCC, FEMA and NWS.

Designed for President to address the nation within 10 minutes.

Messages composed of 4 parts:

- Digitally encoded header
- Attention Signal
- Audio Announcement
- Digitally encoded end-of-message marker

Provided better integration

Modernizes and integrates the nation’s alert and warning infrastructure.

Integrates new and existing public alert and warning systems and technologies through adoption of new alert information exchange format - the Common Alerting Protocol, or CAP.

Provides authorities with a broader range of message options and multiple communications pathways.



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IPAWS enhances and extends a national infrastructure and capability to local, state, territorial, and tribal officials for public alerting and warning

What is IPAWS?

- ✓ IPAWS is a National System for Local Alerting
 - Supports sending geo-targeted alerts from local, state, tribal, territorial officials during emergencies and from the President in the event of a catastrophic national emergency
 - Provides authenticated emergency alert and information messaging from public safety officials to the public through:
 - Radio and television via the Emergency Alert System (EAS)
 - Cellular phones via Wireless Emergency Alerts (WEA)
 - NOAA All Hazards National Weather Radio (NWR) via IPAWS-NOAA gateway
 - Internet applications and websites via the IPAWS All-Hazards Information Feed
- ✓ IPAWS is for:
 - Emergency alert and warning information
 - Anything public safety officials determine is a threat to public safety
 - i.e. not meant for messaging about changes to trash collection schedule
 - Alerting all citizens in a given area



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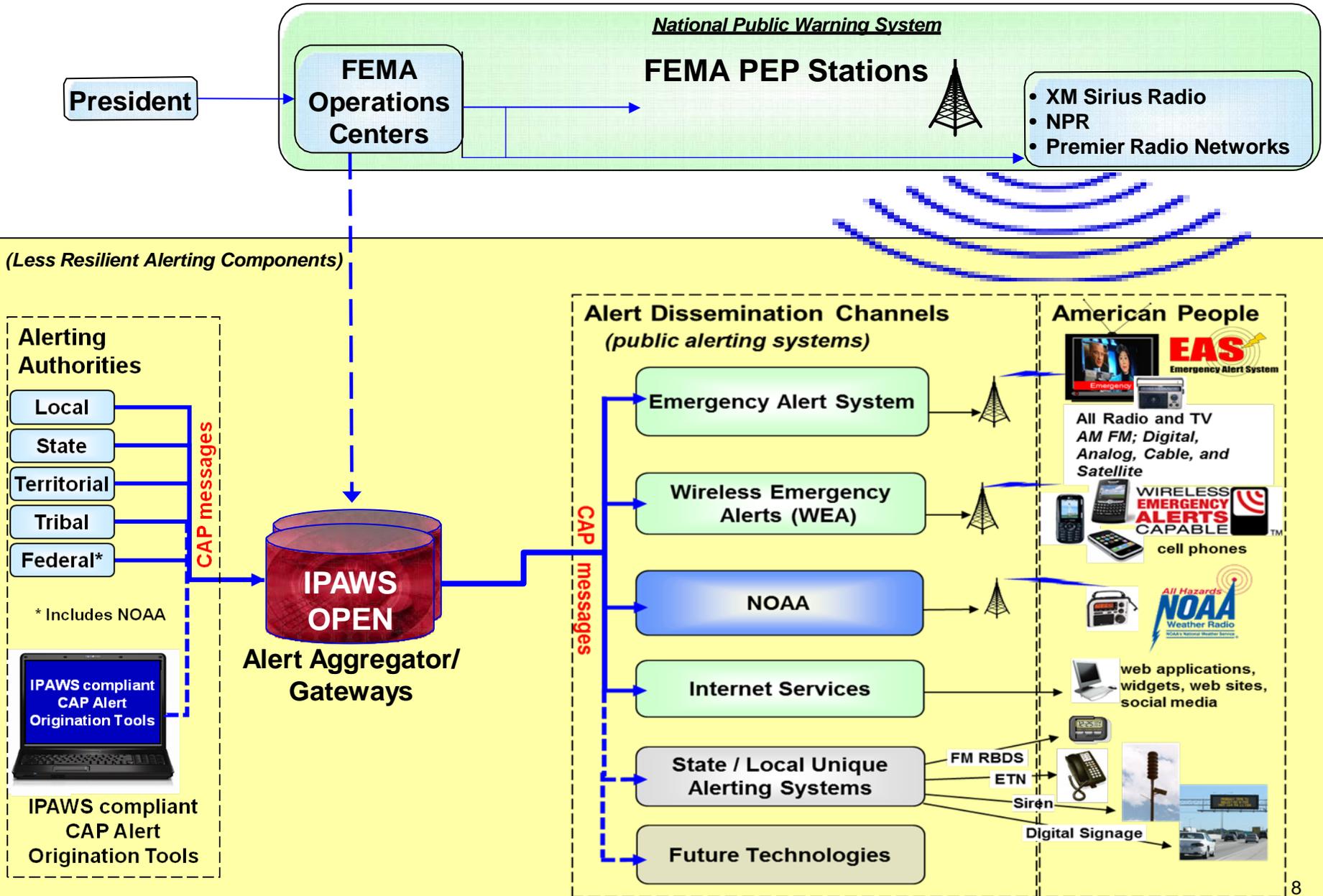
What IPAWS is not

- ✓ Not a subscription-based mass notification system
- ✓ Not an Emergency Telephone Notification (ETN) or reverse dial phone system
- ✓ Not an Short Message Service (SMS) or email - up system
- ✓ Not a paging or limited distribution notification system
 - e.g. can't send a recall notice to a select group



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IPAWS Architecture: A National System for Local Alerting



What technologies work with IPAWS?

- ✓ Broadcast
 - Radio / Wireline Radio
 - TV / Cable
 - Satellite
- ✓ National Weather Service (NWS)
 - NOAA All Hazards Weather Radio (NWR)
 - NOAA Weather Wire Service (NWWS)
 - Emergency Managers Weather Information Network (EMWIN)
 - NWS websites and internet feeds
- ✓ Mobile devices
- ✓ Internet services
- ✓ Unique systems
 - Sirens
 - Digital road signs
 - Text-to-Braille translators
 - Etc.
- ✓ Emerging technologies



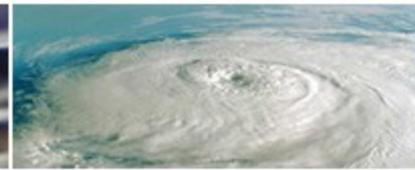
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When can IPAWS be used?

- ✓ Tornadoes
- ✓ Evacuations
- ✓ Earthquakes
- ✓ Child Abductions/AMBER
- ✓ Water Contamination
- ✓ Gridlock
- ✓ Water and Relief Supply Distribution
- ✓ Large Power Outages
- ✓ Toxic Plumes
- ✓ Volcano
- ✓ Shelter-In-Place
- ✓ Presidential Alerts
- ✓ Disaster Resources
- ✓ Wildfires
- ✓ Dam Brakes
- ✓ Chemical Spills
- ✓ Law Enforcement Situations
- ✓ Nuclear Accidents
- ✓ Road Outages/Closures
- ✓ Flash Flooding
- ✓ Snowstorms
- ✓ **Anything public safety officials determine is a threat to public safety**



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IPAWS Components

- ✓ Emergency Alert System (EAS)
- ✓ Wireless Emergency Alerts (WEA)
- ✓ National Weather Service (NWS) tools
- ✓ Internet Services
- ✓ Local, Unique, and Future Technologies



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Emergency Alert System and IPAWS



- ✓ All EAS participants* are required to monitor the IPAWS All Hazards Information Feed for a national EAS emergency alert message
- ✓ Stations may, if they deem it in the public interest, also broadcast alerts and warnings from State, local, and National Weather Service officials which are relevant for the area they serve
- ✓ IPAWS posts a required weekly test (RWT) message for each time zone on the IPAWS All Hazards Information Feed so radio and TV stations can confirm their equipment is functioning
- ✓ State and local authorities can use IPAWS to route alerts to local EAS stations
 - Many have used IPAWS for monthly and weekly EAS tests

*EAS participants are defined by the FCC's EAS rules in C.F.R. 47 Part 11 and include all radio and television broadcast, cable, satellite, and wireline providers (e.g. Verizon FiOS or AT&T Uverse)



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Emergency Alert System Capabilities

via IPAWS, in addition to traditional EAS state or local configurations

- ✓ Trigger TV and radio alerts
- ✓ FCC requires all licensees to monitor IPAWS All Hazards Information Feed
- ✓ Supports audio attachments (mp3)
- ✓ Supports audio links
- ✓ Supports text to speech

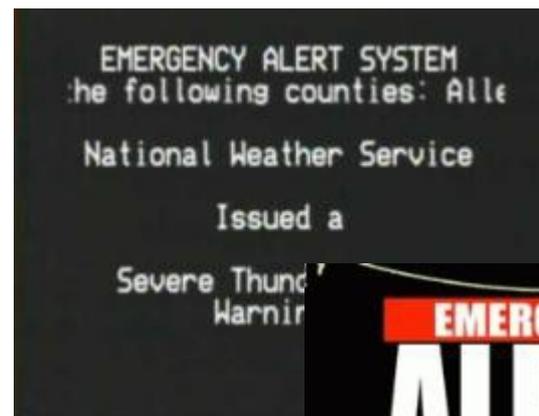


Photo Credit: Hans Yu/ FEMA



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FEMA Primary Entry Point (PEP) Stations

- ✓ To satisfy requirement for a nationwide alert capability for warnings about a national catastrophic event, FEMA maintains relationships and equipment at a number of private sector radio stations across the US
- ✓ FEMA PEP stations include:
 - extended backup power generation system
 - special communications connections to FEMA
 - back up transmitter and EMP protection (newer stations only)
- ✓ IPAWS encourages planning and use of PEP stations in state and local disaster response
- ✓ **Ask about FEMA PEP stations in your area**
 - In coordination with the station owner, local public safety officials may leverage the more resilient infrastructure of the station for delivering local emergency information when the station is not being used for a national catastrophic emergency



Photo by Lauren McFadden - Jun 28, 2011

Fresno, Calif., June 29, 2011 -- A Primary Entry Point Station used for supporting the Emergency Alert System. - Location: Fresno, CA 14



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Wireless Emergency Alerts (WEA)



- ✓ Geo-targeted
 - True location based alerting via broadcast from cell towers
- ✓ Non-subscription based
 - People who live, work, play, or visit do not need to sign up
 - Sends alerts to mobile devices in an area – not to a database of phone numbers
- ✓ Unique ring tone and vibration
 - Alerts “pop-up” on a cell phone
- ✓ Free
 - No cost to send or receive WEAs
- ✓ Not affected by network congestion
 - Uses SMS-Cell Broadcast (SMS-CB), a one-to-many service, to simultaneously deliver messages to multiple recipients in a specified area
 - Different channel than voice, SMS-Person to Person (SMS-PP), email, or web
- ✓ Used for imminent threats, AMBER, and Presidential alerts

**IPAWS is the only way
to send WEAs**



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**WIRELESS
EMERGENCY
ALERTS
CAPABLE**  TM¹⁵

WEAs can impact a lot of people

WEA-capable phones

AT&T	Alcatel 510A; Alcatel 871A; Apple iPhone 6, Apple iPhone 6+, Apple iPhone 5; Apple®iPhone4S; AT&T Fusion 2 (Huawei U8665); BlackBerry 9360, 9810, 9860, 9900; Samsung Galaxy S4 (SGH-i337); Samsung Galaxy S11 (SGH-i777); Samsung Captivate Glide (SGH-i927); Samsung Galaxy Appeal (SGH-i827); Motorola Atrix 2 (mb865)
Cellcom	HTC Desire 4G LTE; HTC One V; iPhone 5; LG Converse; LG Optimus Select; Motorola Defy; Motorola Milestone 3; Motorola Milestone X2; Motorola Razr Maxx; Samsung Chrono; Samsung Freeform 4
Cricket	Blackberry Curve 9350
Sprint	<u>All</u> Sprint phones
T-Mobile	Apple iPhone 6, Apple iPhone 6+, Apple iPhone 5; Apple®iPhone4S; Blackberry®Q10; Blackberry Z10; Blackberry Curve 9315; HTC One; HTC One S; Huawei Summit; LG Optimus L9; Nexus 4; Nokia Lumia 521; Nokia Lumia 710; Nokia Lumia 810; Samsung Galaxy S®III LTE; Samsung Galaxy S®Blaze™4G; Samsung Galaxy Exhibit; Samsung Galaxy S III; Samsung Galaxy Note II; Samsung t159; Samsung Galaxy S Relay 4G; Samsung Galaxy S®4; T-Mobile myTouch; T-Mobile myTouch Q; T-Mobile Prism; Windows Phone 8X by HTC
US Cellular	Blackberry Curve 9350; BlackBerry Torch 9850; LG Freedom: Motorola Electrify 2; Motorola Electrify M; Samsung Character R640; Samsung Chrono 2; Samsung Freeform 4; Samsung Galaxy Axiom; Samsung Galaxy Note II; Samsung Galaxy S III
Verizon	Apple iPhone 6, Apple iPhone 6+, Apple® iPhone 4S; Apple® iPhone 5; BlackBerry Bold™ 9930; BlackBerry Curve™ 9310; BlackBerry Curve 9330; BlackBerry Torch™ 9850; BlackBerry Z10; Casio GZ One Commando®; Casio GZ One Ravine®; Casio GZ One Ravine® 2; DROID DNA by HTC; DROID Incredible by HTC; DROID Incredible 2 by HTC; DROID Incredible 4G LTE by HTC; Droid 2 by Motorola; Droid 2 Global by Motorola; Droid 4 4G by Motorola; Droid Bionic by Motorola; Droid Charge by Samsung; Droid Pro by Motorola; Droid Razr by Motorola; Droid Razr HD by Motorola; Droid X by Motorola; Droid X2 by Motorola; HTC Rhyme™; HTC Trophy™; Intuition™ by LG; LG Cosmos™ 2; LG Enlighten™; LG Extravert™; LG Revere™; Lucid™ by LG; Lucid™2 by LG; Lumia 822; Motorola Barrage™; Motorola Citrus™; Pantech Breakout™; Pantech Hotshot™; Pantech Jest™ 2; Pantech Marauder™; Revolution by LG; Rezound™ by HTC; Samsung Brightside™; Samsung Convoy™ 2; Samsung Fascinate™; Samsung Galaxy Note® II; Samsung Galaxy S® III; Samsung Galaxy Stellar; Samsung Gusto 2; Samsung Illusion; Samsung Intensity III; Samsung Nexus; Samsung Stratosphere™; Samsung Stratosphere™2; Spectrum™ by LG; Spectrum™ 2 by LG; Thunderbolt™ by HTC; Windows Phone 8x



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NOAA All Hazards Weather Radio via IPAWS

- ✓ All-Hazards Emergency Message Collection System, or HazCollect interface, enables emergency alert messages from local alerting authorities to be broadcast over local NOAA Weather Radio transmitters directly from an IPAWS alert message
 - Permission to access HazCollect via IPAWS must be coordinated and approved through the NWS in coordination with your local National Weather Service Office (additional info at <http://www.nws.noaa.gov/os/hazcollect/>)
- ✓ NOAA Weather Radio Capabilities
 - Broadcast of Non-Weather Emergency Messages to local weather radios
 - 1000 transmitters nationwide (162.400-162.550 MHz)
 - Alert can “wake up” weather radio in the middle of the night
 - Radios include battery back-up (work when the power is out)
 - Most schools have weather radios

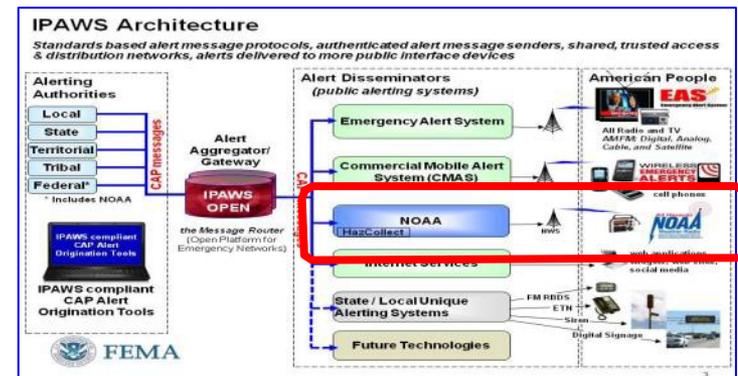
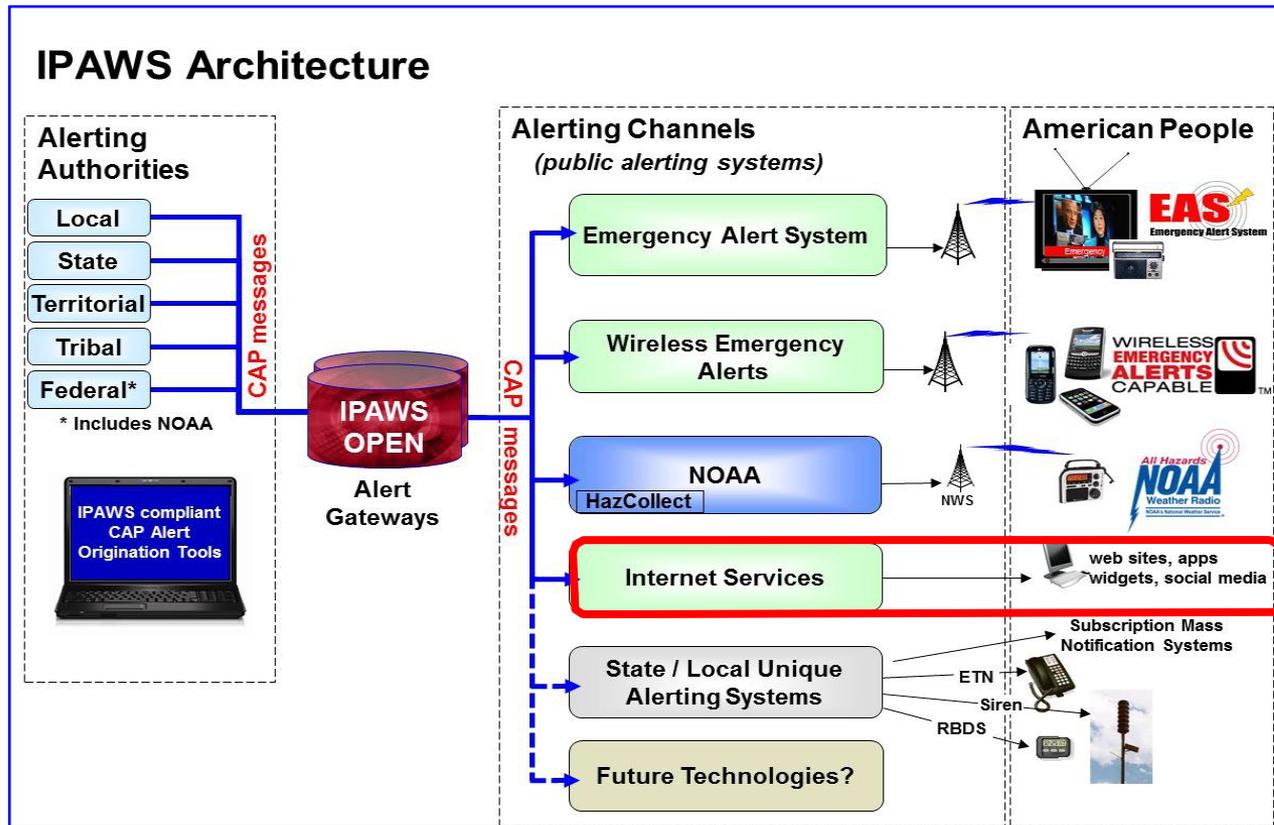


Photo Credit: Jocelyn Augustino/ FEMA



Internet Services / Applications

- ✓ Approved third party internet web services and applications can monitor the All-Hazards Information Feed and retrieve public alerts in CAP format and post or distribute the alert information via their websites, apps, subscription services, etc.

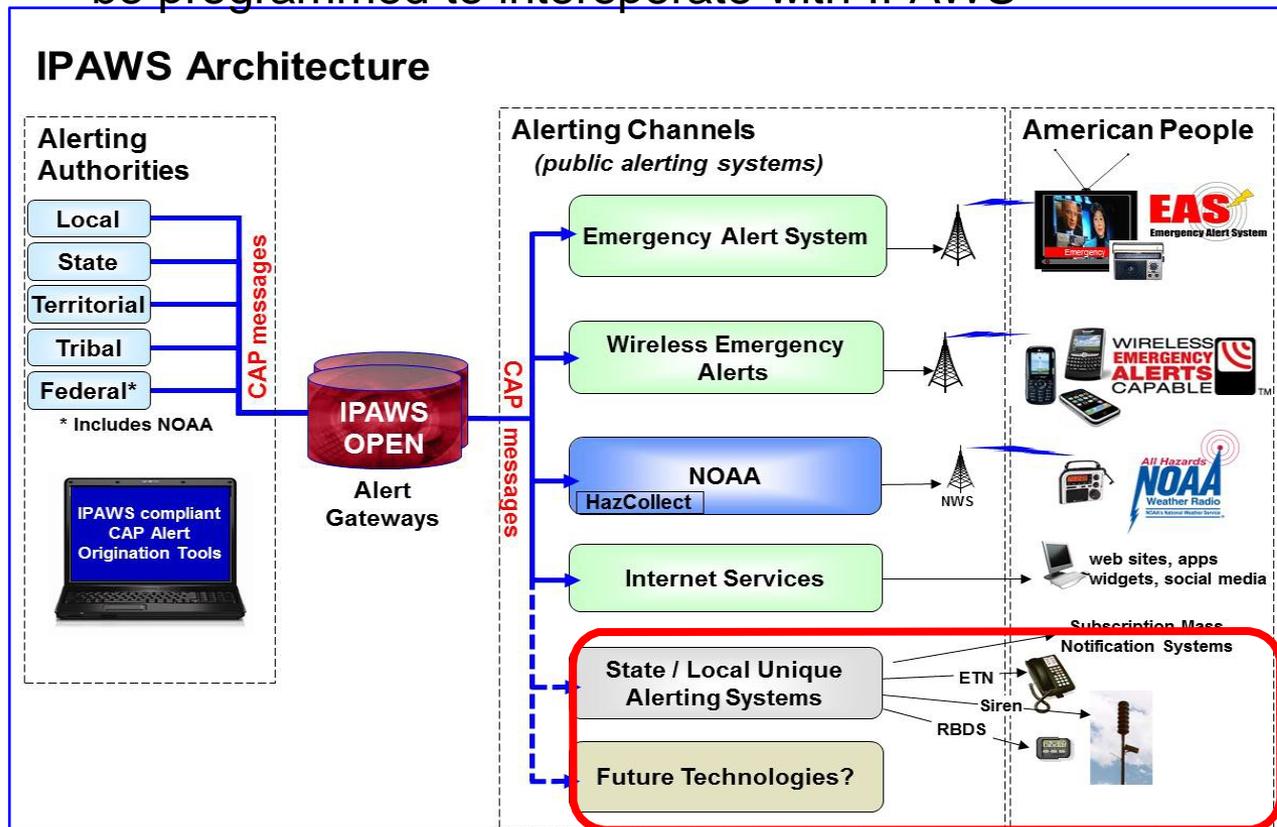


- ✓ Computer or Smart Phone Apps
- ✓ Social Media
- ✓ Subscription services
- ✓ Website pop-ups
- ✓ 40+ Internet Service Providers have signed an IPAWS Agreement



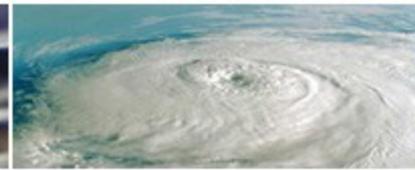
Local, Unique, and Future Technologies

- ✓ All interoperation with IPAWS is based upon an open and internationally recognized message exchange data standard, the Common Alerting Protocol (CAP); existing and future technologies that communicate through internet channels and CAP can be programmed to interoperate with IPAWS



- ✓ Local and unique systems
 - Sirens
 - Digital road signs
 - Text-to-Braille translators
 - Subscription mass notification systems
 - Etc.

- ✓ Emerging technologies



Adopting IPAWS



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Benefits of IPAWS

- ✓ Public alert and warning
- ✓ Information sharing capabilities between Collaborative Operating Groups (COG-to-COG)
- ✓ Situational awareness
- ✓ Incorporates new technologies
- ✓ Most resilient, redundant, secure, and accessible form of public alert and warning
- ✓ Multiple ways to receive alerts and warnings
- ✓ Non-subscription based
- ✓ Geo-targeted
- ✓ Standardized messaging format
- ✓ Rich content (multimedia)
- ✓ Free to use
- ✓ Increases the impact of public alerts and warnings



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Who can use IPAWS?

All authorized alerting authorities, including, but not limited to:

- ✓ States
- ✓ Territories
- ✓ Tribes
- ✓ Cities
- ✓ Counties
- ✓ Universities
- ✓ Fire and police departments
- ✓ Privately owned facilities (e.g. chemical stockpiles, nuclear facilities, railroads, etc.)
- ✓ Federal public safety officials
 - National Weather Service (NWS)
 - National Center for Missing and Exploited Children (NCMEC)
 - The President

FEMA does not send alerts
FEMA is not an authorized alerting authority



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How to Adopt IPAWS

www.fema.gov/alerting-authorities

✓ Application Process for COG-to-COG Alerting Access

- (1) Acquire IPAWS-Compatible Alert Software
- (2) Apply for a Memorandum of Agreement with FEMA
- (3) Install Digital Certificate on System
- (4) COG System Ready to Exchange Messages with Other COGs The COG will now be able to exchange messages with other IPAWS COGs

✓ Application Process for Public Alerting Access

If a COG requires access to public alerting in addition to COG-to-COG messaging, the following additional steps must be completed

- (1) Complete IPAWS Public Alerting Application
- (2) Submit Public Alerting Application to Designated State Official
- (3) Complete IS-247.a—IPAWS Web-based Training (WBT)
- (4) Submit State-Approved Public Alerting Application and IS-247.a Certificate of Completion to IPAWS

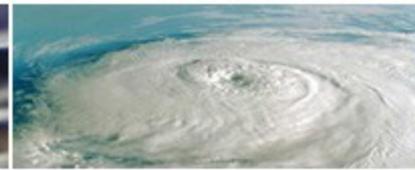
The COG's public alerting permission will now be enabled in IPAWS and the COG will be able to issue public alerts to the authorized area

- ✓ Go to www.fema.gov/informational-materials for a detailed checklist for adopting IPAWS



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All IPAWS COGs have *COG-to-COG* alerting access; not all IPAWS COGs have *public* alerting access



IPAWS Resources



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Tools to Understand, Adopt, Implement, and Use IPAWS

- ✓ Online training for the public
- ✓ Online training for alerting authorities
- ✓ Public service announcements (PSAs)
- ✓ Testing labs and capabilities (the IPAWS Lab at JITC)
- ✓ Toolkit for alerting authorities
- ✓ Templates for governance plans
- ✓ Checklists for adopting, implementing, and using IPAWS
- ✓ Digital library resources
- ✓ Grant guidance
- ✓ Webinars
- ✓ Many other resources

Find these resources at www.fema.gov/informational-materials



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Alert and warning training for the American people (EMI course IS-248 and webclips)

- ✓ The American people course is designed to educate the public and demonstrate the relevance and importance of IPAWS in their lives before, during, and after a disaster
- ✓ Ensure people understand how to access, use, and respond to public alert and warning information from public safety officials



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<http://www.training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-248>
<http://www.fema.gov/ipaws>

IPAWS Public Education Campaign

- ✓ Go to www.Ready.gov/alerts to view the PSA
- ✓ FEMA and the Ad Council produced Public Safety Announcements (PSAs) on Wireless Emergency Alerts (WEA) for distribution
 - 30 and 15 seconds
 - English and Spanish
 - Radio and TV
- ✓ IPAWS is working with Ready.gov to create content on Alerts and Warnings for the Children's Preparedness section
- ✓ Public safety officials and broadcasters can download these free PSAs, customize the tag line, and make the PSAs a part of public education campaigns



Photos by FEMA Graphic Ad Council, Ready.gov, and FEMA sponsored picture of the wireless emergency alert on iOS. To promote Wireless Emergency Alerts. Sept. 23, 2013



EMI Independent Study courses for alerting authorities (IS-247a and IS-251)

- ✓ Learn
 - Benefits of using IPAWS for effective public warnings
 - Skills to draft more appropriate, effective, and accessible warning messages using best practices in alerting
 - Best practices in the effective use of Common Alerting Protocol (CAP)
 - About Collaborative Operating Groups (COGs)—how they are issued, their structure, their capabilities, and their responsibilities, and
- ✓ To find the courses, type “FEMA EMI IS” into your search engine and search for “alert”



- ✓ As of December 31, 2014, 11,251 people have completed IS-247/ + S-247a
 - Required training for IPAWS alerting authorities
- ✓ IS-251 was released in June 2014
 - Advanced course for alerting authorities

Digital library of alert and warning resources

- ✓ Wireless Emergency Alerts (WEA) FAQs
- ✓ Alerting Authorities FAQs
- ✓ EAS Best Practices Guide
- ✓ Fact Sheets
 - IPAWS Open Platform for Emergency Networks (IPAWS-OPEN)
 - Common Alerting Protocol (CAP)
 - Emergency Alert System (EAS)
 - Wireless Emergency Alerts (WEA)
 - How to sign up for IPAWS
 - All-Hazard Alerting
 - AMBER Alerts
 - Alerting Americans with disabilities and others with access and functional needs
 - IPAWS and the American people
- ✓ Games and worksheets for kids

- ✓ All these resources can be found at www.fema.gov/ipaws or www.fema.gov/informational-materials



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Testing with the IPAWS Lab at JITC

- ✓ FEMA supports the IPAWS Lab at DISA's Joint Interoperability Test Command (JITC)
- ✓ The IPAWS Lab at JITC supports state and local alerting tool evaluation, demonstration, exercises and testing



Photo Credit: Hans Yu/ FEMA

Photo Credit: Hans Yu/ FEMA



Photo Credit: Hans Yu/ FEMA



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IPAWS in Action



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BOSTON BOMBINGS' MAN-HUNT

- ▶ Boston officials used Wireless Emergency Alerts (WEA) in the aftermath of the marathon bombings.
- ▶ Massachusetts Emergency Management Agency has the ability and authority to use IPAWS and issued an imminent threat WEA stating, **“Shelter in place still in effect, it does not prevent employees from returning home – MEMA”**.
- ▶ Boston residents then spread the word by tweeting.



Photo Credit: Hans Yu/ FEMA



TORNADOS: ILLINOIS



Photo Credit: NOAA News/ NWS

- ▶ In Washington, IL, 600 – 700 people were in Sunday services when cell phones began to display Wireless Emergency Alerts (WEA).
- ▶ “Everybody started looking down,” the pastor said, and saw a message from the National Weather Service cautioning that a twister was in the area. The pastor stopped the service and ushered everyone to a safe place until the threat passed.
- ▶ A day later, many townspeople said those messages helped minimize deaths and injuries. “That’s got to be connected...the ability to get instant information.” <http://www.kljb.com/story/24017071/text-alert-helped-tornado-survivors-get-to-safety> November 19, 2013

WIRELESS EMERGENCY ALERTS IN ACTION



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SHELTER-IN-PLACE AND EVACUATIONS SUPER STORM SANDY

Photo Credit: Hans Yu/ FEMA

- ▶ “As Hurricane Sandy headed for the city..., sirens began ringing on some New Yorkers’ cell phones. **The alarms were accompanied by messages telling them to stay inside; not to drive; or for those in Zone A, to evacuate.** -- New York Times, November 9, 2012
- ▶ **The emergency alerts showed up where and when they mattered.”**
-- O’Reilly Radar, October 30, 2012



WIRELESS EMERGENCY ALERTS IN ACTION



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Photo Credit: Hans Yu/ FEMA

AMBER ALERTS



A 2-year-old girl was abducted when the vehicle she was in was stolen resulting in the activation of an AMBER Alert.

A business owner who received the AMBER Alert on her cell phone via the Wireless Emergency Alert system noticed a similar vehicle parked outside and determined the license plate matched.

When she approached the vehicle she found the child crying inside and comforted the child until police arrived.

The abductor's associates also heard the AMBER Alert and convinced the abductor to turn herself in.



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WIRELESS EMERGENCY ALERTS IN ACTION

February 4, 2015
Salt Lake City, UT

For More Information

IPAWS Inbox: IPAWS@dhs.gov

IPAWS Website: <http://www.fema.gov/ipaws/>

IS-247.a Integrated Public Alert and Warning System (IPAWS):
<http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-247.a>

IS-248 Integrated Public Alert and Warning System (IPAWS):
<http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-248>

IS-251 Integrated Public Alert and Warning System (IPAWS):
<http://training.fema.gov/EMIWeb/IS/courseOverview.aspx?code=IS-251>



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Contact Information

Damon Penn

*Assistant Administrator
National Continuity Programs,
Prevention & National
Preparedness*

U.S. Department of Homeland Security
500 C Street SW, Room 506
Washington, DC 20472

202.646.4145 Office
Damon.Penn@dhs.gov



FEMA

Antwane Johnson

*Division Director
IPAWS
National Continuity Programs,
Prevention & National
Preparedness*

U.S. Department of Homeland Security
500 C Street SW, Room 506
Washington, DC 20472

202.646.4383 Office
Antwane.Johnson@fema.dhs.gov
IPAWS@dhs.gov



FEMA

<http://www.fema.gov/IPAWS>



Wade Witmer

*Deputy Director
IPAWS Division
National Continuity Programs,
Prevention & National
Preparedness*

U.S. Department of Homeland Security
500 C Street SW, Room 506
Washington, DC 20472

202.646.2523 Office
Wade.Witmer@fema.dhs.gov
IPAWS@dhs.gov



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Integrated Public Alert and Warning System



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