



*National Continuity Programs Directorate*

# **Integrated Public Alert and Warning System (IPAWS)**



**FEMA**

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# Integrated Alert and Warning System Program

## What is IPAWS?

During an emergency, alert and warning officials need to provide the public with life-saving information quickly. The Integrated Public Alert and Warning System (IPAWS) is a modernization and integration of the nation's alert and warning infrastructure and capabilities.

IPAWS integrates new and existing public alert and warning systems and technologies. Local, State, territorial, tribal, and Federal government alert and warning officials are able to integrate their systems with IPAWS to access a broader range of message options and communications pathways for the delivery of alert and warning information to the American people before, during, and after a disaster.

The IPAWS Architecture employs the Common Alerting Protocol digital message standard to enable interoperable, authenticated alert message exchanges between public safety officials and public alerting networks providing citizens the ability to receive alerts on more communications devices.



### The IPAWS Program

Executive Order 13407 states, "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...and to ensure under all conditions the President can communicate with the American people." FEMA is designated within the Department of Homeland Security to implement the policy of the United States for a public alert and warning system and has established a program office to implement IPAWS. FEMA, working together with numerous public and private industry partners is transforming the national alert and warning system to enable rapid dissemination of authenticated alert information over as many communications pathways as possible.

### IPAWS Program Vision

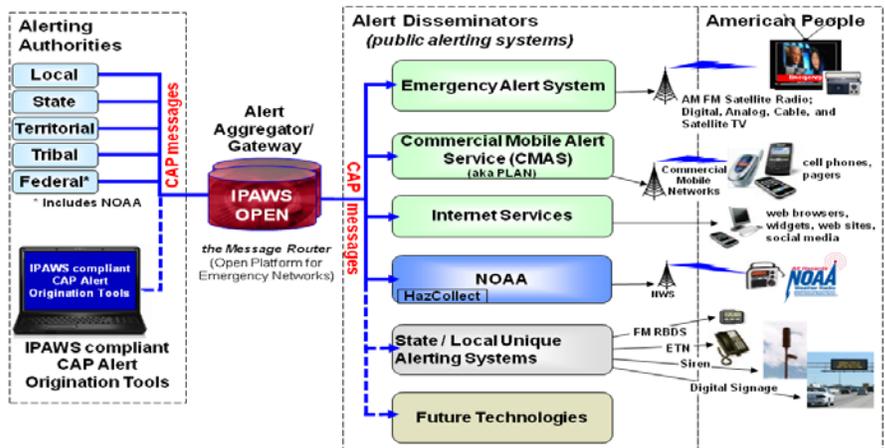
Timely Alert and Warning to American People in the preservation of life and property

### IPAWS Program Mission

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

### IPAWS Program Strategic Goals

- Goal 1 – Create and maintain an integrated interoperable environment for alert and warning
- Goal 2 – Make alert and warning more effective
- Goal 3 – Strengthen the resilience of IPAWS Infrastructure





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## *Emergency Alert System*

### What is EAS?

The Emergency Alert System (EAS) is a national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, and direct broadcast satellite (DBS) providers to provide the communications capability to the President to address the American people during a national emergency. The system may also be used by State and local authorities to deliver important emergency information, such as weather information, AMBER alerts, and local incident information targeted to specific areas.

FEMA is responsible for the implementation, maintenance and operations of the national-level EAS and, in partnership with the FCC and NOAA, maintains a system for use by the President as well as State and local public alerting officials.



#### **EAS Modernization**

The modernization of the EAS began with the FEMA adoption of the Common Alerting Protocol (CAP) standard – a digital standard for the distribution of alert messages to the broadcast and cable industry participants in the EAS. CAP messages will be delivered to EAS participants via digital networks in addition to the traditional audio relay methods already in place. Using two distribution networks for alert information dissemination makes the EAS more resilient as well as provides enhanced alerting capabilities for future implementations. This enhanced connectivity from public safety and emergency management authorities to the public via the partnership of the broadcast, cable, satellite TV, and radio industry, provides timely and resilient alert and warning information to the American people.

#### **Nationwide EAS Test**

The IPAWS Program Management Office is currently planning the first ever nationwide exercise of the national components of the EAS. This test will serve to demonstrate the readiness of the national EAS to provide a single alert message across all broadcast radio and TV media in a short period of time. The test will also increase public awareness of the national alerting capability and partnership with the broadcast community. This initial test will use only the traditional EAS relay networks. As IPAWS implementation progresses, other components of the IPAWS architecture will be included in testing activities.

#### **Primary Entry Point (PEP) Expansion**

Primary Entry Points are FEMA partner broadcast radio stations located throughout the country and U.S. territories with resilient transmission capabilities. These stations serve as the initial broadcast point for national EAS messages. The IPAWS Program is increasing the number of PEP facilities to provide direct broadcast coverage to at least 90% of the American people. The PEP Expansion provides a more resilient, all-hazards alert and warning capability across the nation and ensures that the President can speak to the American people under all emergency circumstances.



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# *Commercial Mobile Alert System*

## What is CMAS?

The Commercial Mobile Alert System (CMAS) component of IPAWS provides an interface to participating mobile service providers for delivery of critical alert information to individual mobile devices only when they are located in an area affected by an emergency situation. The initial IPAWS CMAS capability will provide authenticated public safety officials the ability to send 90 character, geographically targeted text alerts to the public, warning of imminent threats to life and property.

The cellular industry is a critical partner in the implementation and operation of this new alerting capability.



### **Commercial Mobile Alert System**

The inclusion of alerts to mobile service devices in the IPAWS architecture reflects the recognition of the important role that wireless technologies play in citizens' lives today. Providing critical alert information via wireless devices will help the public avoid danger or respond more quickly during crisis, and thereby save lives and protect property.

CMAS' initial concept and requirements were developed by an advisory committee established by the FCC in accordance with the Warning, Alert and Response Network ("WARN") Act of 2006. The Commercial Mobile Service Alert Advisory Committee (CMSAAC) conducted meetings during 2008 with findings published by the FCC. The cellular industry, the FCC, and the DHS Science and Technology (S&T) Directorate, were critical partners with FEMA in developing the standards and technical specifications for this new alerting capability. Industry, DHS S&T, FCC and FEMA continue to work on next generation enhancements for CMAS and other alert and warning technologies.

### **CMAS is different than texting/SMS services!**

A key differentiator of the IPAWS CMAS capability versus existing subscription-based text messaging alert services currently available in some localities is that the IPAWS CMAS will enable alert messages to be sent to any cell phone within range of a particular cellular communications tower(s). The CMAS also utilizes different communications channels and protocols in the cellular system which enable the delivery of alert messages even during times of significant network congestion which frequently occurs during times of emergency.

CMAS may only be used to deliver three types of emergency messages: Presidential Alerts, Imminent Threat Alerts, and America's Missing: Broadcast Emergency Response (AMBER) Alerts. Citizens will be able to opt out of receiving Imminent Threat and AMBER alerts.



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# Common Alerting Protocol

## What is CAP?

The Common Alerting Protocol (CAP) is a digital format for exchanging emergency alerts that will allow a consistent alert message to be disseminated simultaneously over many different communications systems.

FEMA worked with DHS S&T and the Organization for the Advancement of Structured Information Standards (OASIS) to develop a profile to the CAP standard that defines a specific way of using the standard for IPAWS purposes.

The EAS-CAP Industry Group (ECIG), a coalition of Emergency Alert System equipment, software and service providers, developed the guide that describes how to translate IPAWS CAP alerts to traditional EAS broadcast alerts.



### Common Alerting Protocol

CAP provides a standard around which our nations alert and warning capabilities are being integrated. Three documents currently define how CAP is implemented and used by IPAWS:

- OASIS CAP Standard v1.2
- OASIS CAP v1.2 IPAWS USA Profile v1.0 (IPAWS Specification to the CAP Standard)
- EAS CAP Industry Group (ECIG) CAP to EAS Implementation Guide

With CAP as a foundation, the IPAWS Program Management Office (PMO), in partnership with the broad alert and warning community of interest, will continue to seek technologies and best practices to improve the service of emergency alerts and information to the public. Additional information about the CAP Standard can be found on the OASIS standards development body web site: <http://www.oasis-open.org>.

### IPAWS CAP Conformity Assessment Program

The IPAWS PMO sponsored an initial testing period for vendor products demonstrating adherence to and appropriate application of the IPAWS CAP Profile for alert message creation and dissemination. Vendors who participated in the initial testing could publish a Supplier's Declaration of Conformity (SDoC) on the FEMA Responders Knowledge Base (RKB) website (<https://www.rkb.us>) along with a description of their product and contact information.

The FEMA National Preparedness Directorate (NPD), Preparedness-Technology, Analysis, and Coordination (P-TAC) Center, Supporting Technology Evaluation Project (STEP) will continue IPAWS CAP conformity assessment testing in support of the public safety and emergency management community. Vendors are encouraged to pursue conformity assessment testing through the STEP process. Applications and information can be found at <https://www.nimssc.org/step/index>.



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# *IPAWS Open Platform for Emergency Networks*

## What is IPAWS OPEN?

The IPAWS Open Platform for Emergency Networks (OPEN) is the alert message broker between public safety officials/emergency managers and the IPAWS connected major networks and services that can deliver emergency alerts to the public.

IPAWS OPEN authenticates CAP compliant messages from authorized alerting authorities and sends the alerts to radio, television, cellular carriers, Internet services, and other systems and networks that interoperate with IPAWS.

IPAWS OPEN can also broker messages among alerting officials for situational awareness and private messaging. The IPAWS OPEN services are provided at no cost to qualified public safety and emergency management organizations and authorized alerting officials.



### **IPAWS OPEN**

IPAWS OPEN brokers standards based alert and information messages between emergency managers and alert and warning systems through a set of securely hosted web services that enable the routing of standards-compliant emergency messages between disparate third-party applications, systems, networks and devices. IPAWS OPEN also enables the exchange of standards-compliant emergency messaging between public agencies, to enhance situational awareness and interagency coordination.

### **IPAWS OPEN Messaging Formats**

IPAWS OPEN supports three basic messaging formats or structures:

- Common Alerting Protocol (CAP) - Emergency messaging for public alert and warning through CAP compatible applications and systems
- Non-Weather Emergency Messages (NWEM) - Emergency messaging for public alerting distributed via NOAA Weather All Hazards Radio
- Emergency Data Exchange Language Distribution Element (EDXL-DE) – Emergency management information messages used to coordinate between alerting authorities and responders prior to release of a public alert.

The standards used by the OPEN platform are developed and maintained by the Organization for the Advancement of Structured Information Standards (OASIS), <http://www.oasis-open.org>.



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## *Alert Origination Tools*

### What is Alert Origination?

Alert origination tools are software products used by emergency managers, public safety officials, and other alerting authorities to create and send critical life saving messages to the public.

CAP compliant alert origination tools allow public safety and emergency management alerting authorities to generate and send messages through IPAWS OPEN to reach the public through radio, television, cellular mobile devices, Internet based communications, and other CAP compliant alerting systems.

The software industry vendors who develop emergency management and incident management software tools are critical partners enabling interoperation between State and local public safety officials and IPAWS capabilities.



#### **Commercial Alert Origination Software Tools**

Many incident management systems and tools currently available have, or can incorporate, CAP based alerting functions. These tools can be used by State, territorial, tribal, and local emergency managers to send and receive IPAWS CAP compliant alerts to and from IPAWS OPEN. This will enable State, territorial, tribal and local emergency managers to take full advantage of radio, television, cellular, Internet services, and other unique and future technologies which are IPAWS CAP compliant.

#### **Connecting an alert origination tool to IPAWS**

Public safety and emergency management officials using IPAWS CAP compliant alert origination tools can apply for an account on IPAWS. This account, called a Collaborative Operating Group (COG), will allow alerting authorities to send public alerts via IPAWS to participating radio and television stations, cellular carriers, Internet services, NOAA Weather All-Hazards radios, and other public warning devices that are integrated with IPAWS. Officials can also use IPAWS OPEN to exchange messages with other jurisdictions for situational awareness and private incident management messaging. The process for obtaining an IPAWS COG can be found at <http://www.fema.gov/emergency/ipaws>.



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## *National Emergency Alert System (EAS) Test*

### What is the National EAS Test?

The National EAS Test is a nationwide activation of the EAS system using appropriate national protocols that will temporarily interrupt all broadcast media for delivery of a single test message across the entire country.

The National EAS Test will occur on Wednesday, November 9, 2011 at 2pm Eastern Standard Time. The test will begin with EAS tones, followed by approximately two and a half minutes of a test audio message, and close with ending EAS tones.

The National EAS Test will be conducted in partnership with The White House, the FCC, and NOAA and in coordination with State and local officials and the broadcast media industry.



#### **Why test the National Emergency Alert System?**

During periods of extreme national emergency, reliable communications are needed for the President and designated federal authorities to warn and inform the American people. As mandated by Executive Order 13407, it is the responsibility of the FEMA IPAWS Program Management Office to “ensure the conduct of training, tests, and exercises for the public alert and warning system.”

The National EAS Test will assess the readiness and effectiveness of the traditional EAS from origination of a single alert message, delivered across all broadcast media, to reception by the American people. This test will also increase public awareness of alerting capabilities from local, State and Federal officials. Initial phases of the test were successfully conducted in Alaska in January 2010 and again in January 2011. The Alaska tests served as a model for the National EAS Test, producing useful planning information and providing significant findings to support future EAS improvements across all levels of government. Future tests will incrementally incorporate the assessment of the CAP to EAS and other IPAWS components.

FEMA recognizes that collaboration and participation of the broadcast and cable industries and State and local officials is important to the success of the National EAS Test. The IPAWS PMO is actively communicating and engaging leading broadcasting organizations, such as the National Association of Broadcasters, Society of Broadcaster Engineers, and individual state broadcasting associations. The IPAWS PMO encourages regional, State, and local officials to continue building strong working relationships with the broadcasting community. Additionally, FEMA will gauge feedback from the public and other stakeholders during and after the test.



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## *Inventory and Evaluation (I&E)*

### What is the IPAWS I&E?

The IPAWS Program Management Office (PMO) is conducting a survey to inventory, evaluate and assess alert and warning systems used across the nation by Federal, State, tribal, territorial and local emergency management and first responder organizations in accordance with Executive Order 13407.

Inventory analysis results will be used to identify needed changes, modifications and upgrades to future IPAWS programs and projects to continually improve and integrate alert and warning capabilities across the nation. The inventory data will allow the IPAWS PMO to plan additional capabilities, and develop necessary policies, procedures, and resources to address gaps and improve alert and warning in general and alert system interoperability at all levels of government.



#### **Alert and Warning Capability Inventory and Evaluation**

In order to integrate and improve alert and warning capabilities across the nation, it is important to collect information, evaluate, and baseline what is presently being used to advise the public of potential and imminent danger. The data collection effort is being conducted through surveys of Federal, State, territorial, tribal and local Emergency Operation Centers (EOC) across the nation. An Office of Management and Budget (OMB) approved survey instrument is being used for the collection effort and includes questions to:

- Catalog and evaluate existing Federal, State, territorial, tribal, and local government alert and warning systems
- Assess how well the infrastructure meets the needs of emergency managers
- Record capabilities and limitations of current alert and warning systems
- Identify shortfalls between required, actual, and/or planned capabilities

#### **I&E Survey Processes**

Prior to engagement with any State or local EOC, the IPAWS Program Management Office (PMO) coordinates with the FEMA Regional offices and state emergency management agency. The state level alerting capabilities are documented first, and then the territorial, tribal, and local emergency managers are interviewed to catalog their alert and warning resources. The aggregation of data is confidential and accessible only to FEMA personnel for alert and warning capabilities information. During the first year and a half of the project, over 2500 surveys were conducted in 56 States and territories and 52 tribes. The IPAWS PMO appreciates the cooperation of all the emergency managers during the initial stages of project implementation and welcomes continued support as the alert and warning capability inventory survey continues.



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## *Americans with Disabilities*

# How is IPAWS Improving Alerting to Americans with Disabilities?

FEMA recognizes that people with access and functional needs are a critical part of the nation's emergency management team. It is incumbent upon the IPAWS Program Management Office to reach out to the American people to ensure all segments of the American population know and understand alert and warning systems – how they work and what they can expect during times of crisis.



### **FEMA IPAWS**

Executive Order 13407 requires FEMA to “include in the public alert and warning system the capability to alert and warn all Americans, including those with disabilities.”

Utilizing the CAP standard for alert messages provides an opportunity to improve emergency alert information delivery to Americans with access and functional needs. CAP alerts can transport rich multi-media attachments and links in alert messages. The availability of additional content will enable industry partners to develop and provide special content and or devices that can be used by functional and access needs communities to receive emergency alerts.

The IPAWS PMO will continue to establish, develop and maintain collaborative working relationships with various organizations and agencies representing individuals with access and functional needs and help communicate access and functional needs requirements to alert and warning industry partners.

### **IPAWS Conference and Demonstration Activities**

The IPAWS booth is used to demonstrate the IPAWS concept of operations from alert origination, through IPAWS OPEN to alert dissemination technologies. Multiple types of alerting devices receive the CAP messages and sound, display or indicate the alert information. Displays include Emergency Alert System (EAS) devices, NOAA Weather All Hazards Radios, and alerting technologies for persons with access and functional needs.

The IPAWS booth supports both audio and visual alerting technology, as well as accessible collateral materials and displays. An IPAWS informational video containing captions is prominently displayed during the demonstrations. The IPAWS PMO is continually working toward integrating additional technologies and encourage industry innovation to meet the access and functional needs of all Americans.



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# IPAWS Accomplishments and Milestones

## When Will IPAWS be Ready?

The initial operating capability of IPAWS will begin in September 2011 with deployment of the system for EAS participants to receive CAP messages through IPAWS.

The second milestone in IPAWS implementation will be the beginning of CMAS alert delivery to cellular phones via the voluntary participation of commercial mobile carriers beginning in the first quarter of 2012.

The expansion of the national EAS PEP network to cover 90% of Americans directly is planned for completion in 2012.

Planning for future integration of Internet service alerting capabilities to the IPAWS suite is on-going.



### IPAWS Milestones

In the past two years, the FEMA IPAWS program, with the support of public and private sector partners, has made important advancements towards the implementation of an Integrated Public Alert and Warning System that will increase the ability of public safety officials at all levels of government to provide the public with life-saving alerts in a timely manner.

### Recent accomplishments include:

- Developed and deployed IPAWS OPEN as the alert aggregator
- Concluded two years of conformance testing of vendor products to the IPAWS CAP Profile and transitioned the testing program to the National Integration Center's NIMS STEP Program
- Designed a new, more resilient configuration of broadcasting capabilities and brought on line 8 new Primary Entry Point stations
- Stood up an IPAWS CMAS Gateway to carrier testing and completed initial CMAS gateway interface testing with 7 carriers
- Partnered with multiple states and territories to conduct special EAS test activations
- Adopted the Common Alerting Protocol (CAP v1.2)
- Accepted the ECIG CAP to EAS Implementation Guide
- Conducted a nationwide inventory of alerting systems used by state, territorial, tribal, and local emergency management agencies
- Partnered with ATIS and TIA to complete the Commercial Mobile Alerting System Interface Specification
- Partnered with OASIS to complete the IPAWS Technical Specification (IPAWS Profile) to Common Alerting Protocol v1.2

Looking ahead, IPAWS will continue to further the goals of creating and maintaining an integrated interoperable environment for alert and warning, making alert and warning more effective, and strengthening the resilience of alert and warning infrastructure through:

- Nationwide test of the national Emergency Alert System (November 2011)
- Full IPAWS CMAS Gateway capability (January 2012)
- Expansion of PEP stations to provide direct coverage to 90% of the American population (2012)
- Incorporation of alert and warning capabilities through Internet services
- Evaluate emerging alert and warning technologies

For more information on  
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