# The Emergency Alert System (EAS) and All-Hazard Warnings

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# Summary

The Emergency Alert System (EAS) is built on a structure conceived in the 1950s when over-the-air broadcasting was the best-available technology for widely disseminating emergency alerts. The Federal Emergency Management Agency (FEMA) jointly administers EAS with the Federal Communications Commission (FCC), in cooperation with the National Weather Service (NWS), an organization within the National Oceanic and Atmospheric Administration (NOAA). The NOAA/NWS weather radio system has been upgraded to include an all-hazard warning capability. Measures to improve the NOAA network and a new Digital Emergency Alert System (DEAS) are ongoing. DEAS benefits from the additional capacity that digital technology provides for message transmission. In addition, FEMA is developing the Integrated Public Alert and Warning System (IPAWS) to meet requirements for an alert system as specified by an executive order issued by President George W. Bush. When completed, IPAWS should be able to accept any legitimate alert or action announcement, verify it, and relay it to a wide variety of communications devices.

Legislation was passed at the end of the 109<sup>th</sup> Congress (Warning, Alert, and Response Network Act, or WARN Act, as signed into law as Title VI of P.L. 109-347) to assure funding to public television stations to install digital equipment to handle alerts. The law also required the establishment of a committee to provide the FCC with recommendations regarding the transmittal of emergency alerts by commercial mobile service providers to their subscribers. Committee recommendations provided the structure for a Commercial Mobile Alert System (CMAS), regulated by the FCC. Under the timetable agreed to by the FCC and FEMA, CMAS is scheduled to become operational by April 7, 2012.

The federal agency responsible for completing critical work on CMAS, DEAS, and IPAWS is FEMA's National Continuity Program Directorate. IPAWS began as a federal program that would be available for state and local alerts. Its mission was then redefined to apply only for federal messages, placing the program at odds with the broader goals of DEAS and the broadcasters that transmit alerts. According to testimony in September 2009 before the House Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings, and Emergency Management, IPAWS will once more be developed as a comprehensive system to support the broader goal of combining federal participation with state, local, and tribal emergency management practices. Indecision and shifting goals in the past have, however, contributed to a lack of progress and significant delays in implementing IPAWS and related programs.

IPAWS is incorporating leading-edge technologies for Internet Protocol (IP) enabled communications. Its deployment going forward will likely face challenges such as standards development, user acceptance, system management, and infrastructure funding.

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# Overview of the Federal Role

The two mainstays of the U.S. capacity to issue warnings are the Emergency Alert System (EAS), which relies primarily on broadcasting media, and the NOAA Weather Radio All-Hazards Network. The National Weather Service (NWS) of the National Oceanic and Atmospheric Administration (NOAA)[1] sends alerts through NOAA Weather Radio (NWR), now expanded to include warnings for all hazards. Several initiatives are underway within the federal government to improve, expand, and integrate existing warning systems. The most important of these—in terms of developing leading-edge technology—is the Integrated Public Alert and Warning System (IPAWS), a public-private partnership in which the Department of Homeland Security (DHS) has a leadership role. When completed, IPAWS will be able to receive and verify alerts, then route them for transmission over almost any digital media to designated locations. Many communities, meanwhile, are installing local alert systems that send voice, text messages, and e-mail. Many agree that the long-term goal for emergency alerts is to converge federal warning systems into an integrated network that can interface with localized warning systems and also call centers, such as those used for 911 and 211 calls.[2] As will be discussed in this report, the Emergency Alert System relies on many partners. The role of the federal government has been to lead by reason of its prime responsibility to assure presidential alerts for national disasters.

The division of responsibility for alerts has in many cases led to problems with coordination—and uneven effectiveness—of EAS utilization from state to state. There have been expectations among state emergency managers, state broadcaster associations, and others who participate in EAS program planning that the implementation of IPAWS would provide the backbone for a robust emergency alert capability at all levels. The IPAWS program, however, has fallen behind schedule. What appears to be an administrative retrenchment led to a near-exclusive focus on presidential alerts, while programs at the state and local level—and to assist individuals with disabilities—languished.[3] In a report on IPAWS submitted to Congress on September 30, 2009, the Government Accountability Office (GAO) attributed the lack of progress mainly to "shifting program goals, lack of continuity in planning, staff turnover, and poorly organized program information from which to make management decisions."[4] DHS agreed with the recommendations made by GAO in this report; however, recommendations from a 2007 GAO report[5] were agreed to but not met.

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[1] The National Oceanic and Atmospheric Administration (NOAA) is an agency of the Department of Commerce.

[2] 911 calls go to Public Safety Answering Points (PSAPs). 211 calls typically go to municipal call centers. The role of call centers in providing warnings and information in emergencies is discussed in CRS Report R41208, *Emergency Communications: Broadband and the Future of 911* , by Linda K. Moore.

[3] Comments by, among others, Ann Arnold (Chair, Texas SECC and Executive Director, Texas Association of Broadcasters), Suzanne D. Goucher ( Chair, Maine SECC and President, Maine Association of Broadcasters), Art Botterell (Manager, Community Warning System, Contra Costa County Sheriff's Office, CA) and Clay Freinwald (Chair, Society of Broadcast Engineers' EAS Committee, Chair Washington SECC, and Radio Frequency Systems Engineer, Entercom) at "Promoting an Effective Emergency Alert System on the Road to a Next Generation EAS," FCC EAS Summit, May 19, 2008, Washington, DC.

[4] GAO, *Emergency Preparedness: Improved Planning and Coordination Necessary foe Development of Integrated Public Alert and Warning System*, GAO09-834, September 30, 2009, Highlights.

[5] GAO, *Emergency Preparedness: Current Emergency Alert System Has Limitations, and Development of a New Integrated System Will Be Challenging*, GAO-07-411, March 2007.

# National Continuity Programs

The National Continuity Programs (NCP) Directorate, within the Federal Emergency Management Administration (FEMA), has responsibility for IPAWS. In testimony before Congress,[6] Damon C. Penn, Assistant Administrator of the NCP, testified regarding his intentions to re-energize the department's efforts for IPAWS and other infrastructure and planning initiatives.[7] Mr. Penn assumed these responsibilities in August 2009. He described FEMA as "on schedule to achieve our IPAWS vision by 2012." Four specific goals were cited:

- Interoperable standards and interfaces.

- Redundancy in the dissemination network.

- Integrated message distribution along multiple paths.

- Additional PEP stations for direct EAS coverage.

In addition, NCP is developing a strategic plan for IPAWS that will align federal goals with the needs of state, local, tribal, and territorial officials.[8]

The initial stages of the program are projected to be realized on schedule, according to comments by Mr. Penn and Antwane V. Johnson, Division Director/PM, DHS/FEMA, IPAWS, at a June 2010 meeting sponsored by the Federal Communications Commission (FCC).[9]

# Commercial Mobile Alerts

In response to a requirement in the Warning, Alert, and Response Network Act, or WARN Act, as signed into law (Title VI of P.L. 109-347), the FCC worked with commercial mobile service providers to create a Commercial Mobile Alert System (CMAS) that would be able to relay alerts through cell phones. In addition to presidential alerts, which clearly are a federal responsibility, the service would transmit emergency alerts generated by state, local, and other non-federal authorities. The gateway for CMAS is being developed as part of IPAWS. FEMA and the FCC have committed to a timetable for development of IPAWS and CMAS that is intended to deliver mobile alert messages to consumers by April 7, 2012.[10]

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[6] Hearing, House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings, and Emergency Management, "This is NOT a Test: Will the Nation's Emergency Alert System Deliver the President's Message to the Public?" September 30, 2009.

[7] IPAWS projects are described at http://www.fema.gov/emergency/ipaws/.

[8] Progress reports and other information are posted at http://www.fema.gov/emergency/ipaws/ http://www.fema.gov/emergency/ipaws.

[9] FCC, "Workshop on 21st Century Emergency Alerting, Leveraging Multiple Technologies to Bring Alerts and Warnings to the Public," June 10, 2010, Washington, DC.

[10] FCC News, "FEMA and the FCC Announce Adoption of Standards for Wireless Carriers to Receive and Deliver Emergency Alerts Via Mobile Devices," December 7, 2009, at http://hraunfoss.fcc.gov/edocs_public/attachmatch/ DOC-295038A1.pdf.

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## National Response Framework

Policies and programs to improve post-disaster information appear to show the same symptoms of poor planning and coordination that have delayed the implementation of IPAWS and related alert programs. Coordination of federal, state, tribal, and local responsibilities for providing emergency information is addressed in the National Response Framework (NRF).[11] Not all of the resources needed to provide alerts and information before, during, and after an emergency are recognized in the NRF, and it appears that little has been done to link these resources into an effective communications plan. The GAO, for example, has reported on the limitations in disaster planning to assure communications for first responders.[12] Even less attention has been given to getting vital information from the top level of emergency managers and first responders to disaster victims. For example, while the United States continues to invest in improved systems for monitoring earthquake activity,[13] there appears to be no consistent planning for how this information could be used to save lives of earthquake victims. Forecasts about the probable location and intensity of aftershocks could guide evacuations to comparatively safe areas of refuge: information that could be shared in real-time not only with first responders but also with the evacuees—if alert technologies were linked to seismic information networks.[14] Similarly, although plans are widely in place to provide life-saving resources such as shelter, food and water, and medical care and health services, the communications plans that would direct disaster victims to these resources appear to be primarily local. Many plans rely on informing first responders or the National Guard, not the affected community.

# EAS Administration

EAS currently sends emergency messages with the cooperation of broadcast radio and television and most cable television stations. It originated as CONELRAD (Control of Electromagnetic Radiation) in 1951, as part of America's response to the threat of nuclear attack. In 1963, the system was opened to state and local participation. Through most of its existence, the alert system was known as the Emergency Broadcast System. The name was changed when the technology was upgraded and automated during the 1990s. The current Emergency Alert System is required only to transmit federal warnings although neither it nor its predecessors has been used for this

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[11] "Federal planning for external affairs functions recognizes State, tribal, and local responsibilities for providing information to their citizens." National Response Framework, National Response Plan, Emergency Support Function #15 - External Affairs Annex at http://www.fema.gov/pdf/emergency/nrf/nrf-esf-15.pdf.

[12] In *Emergency Communications: Vulnerabilities Remain and Limited Collaboration and Monitoring Hamper Federal Efforts*, (GAO-09-604, June 2009), the GAO uses "Case Study Disaster Scenarios" to evaluate communications capacity, continuity, and interoperability. The scenarios are: Sacramento Flooding, Miami Hurricane, Honolulu/Hilo Tsunami, Boston Terrorist Attack, Memphis Earthquake, and Mount Rainier Volcanic Mudflow.

[13] An overview of policies and programs is provided in CRS Report RL33861, *Earthquakes: Risk, Detection, Warning, and Research*, by Peter Folger.

[14] The feasibility of sending out shaking forecasts through an early warning network was discussed in a congressional hearing on January 20, 2010. The warnings would be sent, for example, to railroads and power plants that might be shut down automatically if heavy shaking was forecast in their area. House of Representatives, Committee on Natural Resources, Subcommittee on Energy and Mineral Resources, "Legislative Hearing on H.R. 3820, January 20, 2010. See also written testimony of Dr. David Applegate, Senior Science Advisor for Earthquakes and Geologic Hazards, U.S. Geological Survey, Department of the Interior: "In the minutes after an earthquake strikes ... knowing where shaking was most intense can save lives by providing emergency responders with the situational awareness they need to concentrate their efforts where they matter most."

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purpose. The value to the American people of EAS has been provided largely by the voluntary transmission of local warnings.

Congress has placed responsibility for civil defense measures, which include operation of the present-day EAS at the national level, with the Director of the Federal Emergency Management Agency (FEMA),[15] now part of DHS. The FCC has been designated by FEMA to manage broadcaster involvement in EAS; it currently provides technical standards and support for EAS, rules for its operation, and enforcement within the broadcasting and cable industries. Non-federal EAS operational plans are developed primarily at the state and local level. The emergency response officials who, typically, initiate an EAS message for a state or local emergency also work with FEMA. The FCC requires states that have developed an EAS plan to file the plans with the FCC. Not all states have FCC-compliant EAS plans that have been approved and reviewed by the FCC. The decentralized process of EAS coordination and implementation contributes to uneven planning; for example, procedures for initiating a message and activating EAS differ from state to state.

Umbrella organizations that participate in EAS planning and administration include the Media Security and Reliability Council (an FCC Advisory Committee), the Primary Entry Point (PEP) Administrative Committee,[16] and associations such as the National Association of Broadcasters, the National Alliance of State Broadcasters Associations, and individual state broadcasting associations. States organize Emergency Communications Committees (SECCs) whose members often include representatives from broadcasting companies or local TV and radio stations as well as public safety officials. Typically the SECCs operate in collaboration with—or under the supervision of—the state office responsible for emergency planning. These committees agree on the chain-of-command and other procedures for activating an emergency message through radio and television. The constraints of current EAS technology, as specified by the FCC, limit a state or local EAS message to no more than two minutes. Emergency alert agreements with broadcasters, therefore, usually provide for both EAS warning messages and follow-up broadcast programming.

## Broadcaster Participation

The participation of broadcast and cable stations in state and local emergency announcements is voluntary. Over 30 radio stations have been designated as National Primary Stations that are required to transmit presidentially initiated alerts and messages. The National Primary Stations form the backbone of the federal-level Emergency Alert System, and are directly under the governance of FEMA. In times of a national emergency, their broadcasts would be relayed by PEP stations to radio and television stations that rebroadcast the message to other broadcast and cable stations until all stations have been alerted. This system of relaying EAS messages is generally referred to as the "daisy chain." State and local emergency alerts enter the daisy chain through the PEPs, which can include the national primary stations (also referred to as Presidential PEPs). The FCC requires the states to initiate weekly or monthly tests; it does not require testing at the national level. There are therefore several levels of governance, each of which uses

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[15] P.L. 103-337, National Defense Authorization Act for Fiscal Year 1995, Title XXXIV - Civil Defense, Sec. 603 (42 U.S.C. § 5196), amending the Federal Civil Defense Act of 1950 (64 Stat 1245). Provisions are now embodied in the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S C. 5121 and seq.).

[16] The Primary Entry Point (PEP) system consists of a nationwide network of stations connected with government activation points through designated National Primary Stations (LP1s). See also http://pepac.org/.

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different combinations of radio broadcast stations to initiate and transmit messages. There is a federal level, for national alerts, administered by FEMA, using radio broadcast stations with equipment that conforms to FCC requirements; there are state plans, as described above; and there can be local plans. States, in particular, will use combinations of radio stations with different broadcast transmission coverage to match the configuration of their geographical areas. One constant is that the FCC sets the requirements for equipment for all stations.

The FCC requires broadcast and cable stations to install FCC-certified EAS equipment as a condition of licensing. Radio and television broadcast stations, cable companies, and wireless cable companies must participate. Cable companies serving communities of less than 5,000 may be partially exempted from EAS requirements. For the broadcast of non-federal emergency messages, the FCC has ruled that the broadcasters, not a state or local authority, have the final authority to transmit a message.[17] Historically, the level of cooperation from the broadcasting industry has been high.

## Primary Entry Points

A program component of IPAWS is to improve the robustness of the communications network to PEP radio stations by switching from dial-up to satellite distribution. The number of PEP broadcast stations is to be expanded to provide satellite communications capability to every state and territory. These steps are meant to assure the survivability of radio broadcast communications in the event of a catastrophic incident. The public radio satellite system is already equipped to send DEAS messages to about 860 public radio stations across the country. FEMA plans to assess the number of PEP stations needed to maximize the reach of EAS alerts.[18] It is working with the Primary Entry Point Administrative Committee and the U.S. Army Corps of Engineers to strengthen the alert network.

## Digital Emergency Alert System

The FCC has promulgated new rules to include digital media carriage of EAS messages, the Digital Emergency Alert System (DEAS). In an FCC Report and Order released November 10, 2005,[19] EAS requirements were expanded to include digital communications over direct-broadcast television and radio, digital cable, and direct-to-home satellite television and radio. Companies using these media are required to install EAS equipment to handle digital formats.

## EAS Technology

EAS technology uses coders and decoders to send data signals recognized as emergency messages. In manual mode, an EAS alert is sent to a broadcaster, either over an EAS encoder-decoder or by other means, such as a telephone call. Where agreements have been put in place

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[17] FCC, *Report and Order and Further Notice of Proposed Rule Making*, Released December 9, 1994, FO Docket Nos. 91-301 and 91-171, 10 *FCC Record* 1786.

[18] Testimony of Damon C. Penn, Hearing, House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Economic Development, Public Buildings, and Emergency Management, "This is NOT a Test: Will the Nation's Emergency Alert System Deliver the President's Message to the Public?" September 30, 2009.

[19] FCC, *First Report and Order and Further Notice of Proposed Rulemaking*, Docket No. 04-296, relaesed November 10, 2005 at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-191A1.pdf.

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with broadcasters, EAS messages can be created and activated by state or local officials and transmitted automatically to the public without the intervention of broadcasting staff. These automated messages are broadcast to the public using computer-generated voices. All EAS messages carry a unique code which can be matched to codes embedded in transmitting equipment; this authenticates the sender of the EAS message. To facilitate the transmittal of emergency messages, messages are classified by types of events, which also are coded. These event codes speed the recognition and re-transmittal process at broadcast stations. For example, a tornado warning is TOR, evacuation immediate is EVI, and a civil emergency message is CEM. When a message is received at the broadcast station, it can be relayed to the public either as a program interruption or, for television, as a "crawl" at the bottom of the TV screen.

## NOAA Weather Radio

Digitized signal technology for EAS is the same as that used for the NOAA Weather Radio (NWR). Widely recognized as the backbone of public warning systems, NWR broadcasts National Weather Service forecasts and all-hazard warnings for natural and man-made events. The compatibility of the signals makes it possible for EAS equipment used by the media to receive and decode NWR messages automatically. Weather radios can be tuned directly to NWR channels. Many can be programmed to receive only specific types of messages—for example, civil emergency—and for specific locations, using Specific Area Message Encoding (SAME). Standardized SAME codes can be used in almost any device with a radio receiver. These can sound an alarm or set off a flashing light. Similar technology is available to provide NWR messages by satellite TV and over the Internet as messages or as e-mail. Therefore, although EAS and NWR are broadcast technologies set up to operate on a one-to-many basis, these broadcasts can be screened and decoded to provide customized alerts.

## All-Hazard Warning Technology

Given the advanced state of other communications technologies, especially the Internet and wireless devices, the reliance on delivering EAS warnings by radio and television broadcasting seems out-of-date. Some states and communities are pioneering alert systems that utilize other infrastructures. In particular, many communities participate in programs that use e-mail, wireless text messages or the Internet for alerts; some issue mass alerts to telephones, using auto-phone dialing technologies, or to wireless devices using cell broadcasting technology.[20]

## Common Alerting Protocol

A standardized format known as Common Alerting Protocol (CAP)[21] has been developed for use in all types of alert messages. CAP has received widespread support from the public safety community and has been accepted as a standard by the international Organization for the Advancement of Structured Information Standards (OASIS). One of its key benefits is that it can be used as a single input to activate multiple warning systems. It is being used as a standard for new, digitized alert networks using multiple technologies. In a digital environment, CAP is

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[20] Cell broadcasting uses wireless networks to send alerts to wireless devices in designated areas; the device must include Cell Broadcast Service software.

[21] CAP information at http://www.incident.com/cookbook/index.php/CAP_Fact_Sheet.

intended to replace SAME codes currently used in EAS. Federal agencies that support CAP include DHS, the Department of Justice, the National Weather Service, and the U.S. Geological Survey.[22]

## Alerting Individuals with Disabilities and Others with Special Needs

The FCC requires that EAS messages be delivered in both audio and visual (captions, message boards, other) formats. Regular broadcasts about emergencies, however, do not have to comply with this requirement. The community of disabled individuals, therefore, is often under-served when emergency information is disseminated outside the EAS network. Although a number of technologies exist to provide accessible formats for people with special needs—such as those with disabilities, the elderly, and those who do not understand English—many of these solutions are not supported by the current EAS system or are so expensive as to be inaccessible to most. FCC rules for the new CMAS for wireless devices require that the devices must include an audio attention signal and vibration cadence, to meet the needs of subscribers with disabilities. Incorporating technologies that expand the reach of EAS to all segments of the population, at a reasonable cost, is one of the challenges of delivering an effective warning system that is truly nationwide.[23]

# Proposals and New Programs

Advocates of all-hazard warning systems are seeking interoperability among warning systems, standardized terminology, and operating procedures in order to provide emergency alerts and information that reach the right people, in a timely manner, in a way that is meaningful and understood by all. In 1999, FEMA and the Departments of Commerce and Agriculture took the lead in a multi-agency working group to explore ways to create an all-hazard warning network.[24] Their recommendations included using NWR as the backbone for a national all-hazard warning system and the establishment of a permanent group to promote improvements in warning systems. The following year, the National Science and Technology Council at the White House sponsored a report that explored the types of technologies and systems that are used or could be used for emergency alerts.[25] Among its recommendations were the creation of a public-private partnership that would bring all stakeholders together; one or more working groups to address issues such as terminology, technology, location-specific identifiers, and cost-effective warning systems; system standardization; and increasing the number of communications channels for warnings. The report concluded that substantial improvements in early warning systems could be achieved through coordination and better use of existing technologies.

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[22] List at http://www.incident.com/cookbook/index.php/Who_Is_Using_CAP%3F.

[23] For a discussion of the issue in the context of the Americans with Disabilities Act, see CRS Report RS22254, *The Americans with Disabilities Act and Emergency Preparedness and Response*, by Nancy Lee Jones.

[24] National Partnership for Reinventing Government, "Saving Lives with an All-Hazard Warning Network," 1999, at http://www.nws.noaa.gov/om/all-haz/all-haz1.htm.

[25] National Science and Technology Council, Working Group on Natural Disaster Information Systems, Subcommittee on Natural Disaster Reduction, "Effective Disaster Warnings," November 2000 http://www.sdr.gov/NDIS_rev_Oct27.pdf.

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Also in 2000, a public-private, multi-disciplinary group was organized as the Partnership for Public Warning (PPW). In 2002, the group received funding[26] to convene meetings and prepare comments regarding the Homeland Security Advisory System (HSAS). Workshop findings were later expanded into recommendations in "A National Strategy for Integrated Public Warning Policy and Capability." The purpose of the document was to "develop a national vision and goals" for improving all-hazard warning systems at the federal, state, and local levels. PPW suggested that DHS take the lead in developing a national public warning capability. The PPW discussed the role of an alert system in public safety and homeland security and concluded that current procedures are "ineffective." PPW's recommendations centered on developing multiple, redundant systems using various technologies with common standards that would be "backward compatible" with EAS (including Amber Alert codes) and National Weather Service technologies.[27] It subsequently scaled back its activities for lack of funding.[28]

## Executive Order: Public Alert and Warning System

On June 26, 2006, President George W. Bush issued an executive order stating that U.S. policy is "to have an effective, reliable, integrated, flexible, and comprehensive system to alert and warn the American people." To achieve this policy, the President set out a list of functional requirements for the Secretary of Homeland Security to meet that respond to the recommendations of experts in this field. In summary, these requirements cover

- evaluating existing resources;

- adopting common protocols, standards, and other procedures to enable interoperability;

- delivering alerts on criteria such as location or risk;

- accommodating disabilities and language needs;

- supporting necessary communications facilities;

- conducting training, testing, and exercises;

- ensuring public education about emergency warnings;

- coordinating and cooperating with the private sector and government at all levels;

- administering the existing Emergency Alert System as a component of the broader system;

- ensuring that the President can alert and warn the American people.

The order also specified the level of support expected from other departments and agencies in meeting the requirements for a better warning system. The Secretary of Homeland Security was ordered to "ensure an orderly and effective transition" from current capabilities to the system

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[26] Funding came from FEMA, the National Science Foundation, the National Weather Service, the U.S. Geological Survey, and private sources.

[27] Documents at http://www.partnershipforpublicwarning.org/ppw/natlstratsumm.html.

[28] Memorandum to PPW Members, June 30, 2004. The PPW website is maintained by MITRE Corporation.

described by executive order.[29] The development and implementation of IPAWS is part of the response to the order.

## The WARN Act

The Warning, Alert, and Response Network Act (WARN Act), as signed into law as Title VI of P.L. 109-347, required the establishment of a Commercial Mobile Service Alert Advisory Committee by the FCC.[30] Following the signing of the act into law, the FCC assembled the committee, as required, with members from state, local, and tribal governments, from industry and associations, and with representatives of persons with special needs.[31] This committee, within a year of formation, was charged with providing the FCC with recommendations on technical requirements, standards, regulation and other matters needed to support the transmittal of emergency alerts by commercial mobile service providers to their subscribers.[32] The FCC, alone or in consultation with the National Institute of Standards and Technology (NIST) of the Department of Commerce, was given the responsibility of adopting proceedings to be used in the promulgation and enforcement of rules reflecting the conclusions of the committee.[33] The digital broadcasting capacity of public television stations is to be used to "enable the distribution of geographically targeted alerts by commercial mobile service providers," based on recommendations from the committee.[34] The WARN Act also included provisions for commercial wireless service providers to opt in or out of the emergency alert service, with requirements for informing consumers.[35]

### Commercial Mobile Service Alert Advisory Committee

The committee submitted recommendations on using commercial cell phone technology for emergency alerts within the time frame required by Congress (i.e., by October 12, 2007). In accordance with provisions in the WARN Act, the FCC completed a proceeding reviewing the recommendations made by the Commercial Mobile Service Alert Advisory Committee (CMSAAC) within 180 days of receiving the recommendations.[36]

### Commercial Mobile Alert System

The proposal to develop a Commercial Mobile Alert System (CMAS) and other recommendations made by the CMSAAC were opened to public comment by the FCC on December 14, 2007.[37] In

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[29] "Executive Order: Public Alert and Warning System," released June 26, 2006, available at http://www.whitehouse.gov/news/releases/2006/06/20060626.html. Executive Order 13407.

[30] P.L. 109-347, Sec. 603 (a).

[31] P.L. 109-347, Sec. 603 (b). Information about committee activities and membership is at http://www.fcc.gov/pshs/advisory/cmsaac/.

[32] P.L. 109-347, Sec. 603 (c).

[33] P.L. 109-347, Sec. 602 (a).

[34] P.L. 109-347, Sec. 602 (c).

[35] P.L. 109-347, Sec. 602 (b).

[36] P.L. 109-347, Sec. 602 (a).

[37] FCC, *Notice of Proposed Rulemaking*, December 14, 2007, PS Docket No. 07-287.

the subsequent rule-making,[38] the FCC adopted most of the recommendations made by the CMSAAC. In addition to message formats and other standards, some of the key rules cover

- Type of alerts. Three alert categories, as defined in the Report and Order, are required to be carried by participating carriers: presidential, imminent threat, and AMBER alerts.

- Coverage of alerts. The standard for location coverage is to be county-wide.

- Management of alerts. The CMSAAC recommended that a federal agency act as an aggregator in accepting, verifying, and routing messages.

The FCC continues to refine the rules for providing CMAS. The most recent set of requirements is contained in the *Third Report and Order*, released August 7, 2008 (Docket No. 07-287). The WARN Act did not provide a mandatory deadline for the implementation of CMAS.

The NCP Directorate will take on the responsibility of acting as a gateway and aggregator of alerts for dissemination through CMAS.[39] On December 7, 2009, FEMA and the FCC jointly announced that FEMA had adopted the CMAS Government Interface Design specifications. This triggered requirements in the *Third Report and Order* for wireless carriers that have agreed to participate in the CMAS program to begin development and testing. The deadlines established by the FCC give these carriers until April 7, 2012, to provide CMAS alerts sent through the IPAWS gateway.[40] According to press reports, the major wireless carriers have indicated that they will participate in the program.[41]

## The Future of IPAWS

In the long term, IPAWS should be able to accept any legitimate alert or action announcement, verify it, and relay it to a wide variety of devices. Information about natural or manmade hazards would go to broadcast media, to marine and weather radios, over the Internet, to cell phones and other wireless devices, to electronic signs, and to any other device programmed to accept alert signals. Messages could be to specific geographic areas (geo-location). Information would be available in multiple languages and formats accessible to those with special needs. The technology to achieve this would reside in servers that would act as information gateways. The keystone of this information network would be the IPAWS server, or servers, that manages the alert or other information.

## Broadband Policy and Emergency Alerts

Congress required the FCC to prepare a National Broadband Plan (NBP) that included

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[38] FCC, *First Report and Order*, April 9, 2008, PS Docket No. 07-287 (FCC 08-99).

[39] "Nationwide Emergency Mobile Telephone Alert System Soon to Be Realized," Press Release, U.S. House of Representatives, Committee on Homeland Security, May 30, 2008.

[40] FCC Public Notice, "FCC's Public Safety and Homeland Security Bureau Sets Timetable in Motion for Commercial Mobile Alert Service Providers to Develop a System that Will Deliver Alerts to Mobile Devices," December 7, 2009 at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-09-2556A1.pdf.

[41] Daily Report for Executives, "FCC, FEMA Initiate Testing Phase of Wireless Emergency Alert System," by Alexel Alexis, December 8, 2009.

a plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.[42]

The NBP was submitted to Congress on March 16, 2010. In line with instructions from Congress, the plan included a section on public safety broadband communications that covered NG9-1-1, the Emergency Alert System, broadband radio networks for first responders, cybersecurity, and protection of critical infrastructure.[43]

Recommendation 16.3 discussed "Leveraging Broadband Technologies to Enhance Emergency Communications with the Public." Most of the section dealt with improving the nation's 9-1-1 service and the transition to next generation technology (NG9-1-1) using networks based on the Internet Protocol. In general, the NBP discussed broadband in terms of speed and ubiquity, referring to either third- or fourth-generation (3G or 4G) wireless technology, but in the Public Safety chapter, broadband is used to refer to IP-enabled network technology, which is a major characteristic of 4G. As mobile devices using 4G technologies become prevalent, the use of downloadable software applications to deliver information will develop into a major component of communications.[44] In this new environment, emergency alerts can be customized to improve their reach and effectiveness.

In the NBP, the FCC made two recommendations regarding emergency alerts. It set itself the task of "exploring all issues for developing a multiple-platform, redundant next-generation alarm system." (Recommendation 16.16.) It also recommended that the executive branch clarify agency roles regarding the implementation and maintenance of next-generation alert and warning systems. (Recommendation 16.17.)

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[42] P.L. 111-5, § 6001 (k) (2) (D); 123 STAT. 516.

[43] FCC, *Connecting America: The National Broadband Plan*, Chapter 16, Public Safety, released March 16, 2010, at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf.

[44] See, for example, "Mobile operators expect app sales to outweigh call revenues in 2013," by Stanley Pignal, Financial Times, August 23, 2010.