

# **GUIDE TO DEVELOPING A PUBLIC WARNING PLAN TO SERVE LOCAL AREAS**

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## **Background**

From the ride of Paul Revere to today's severe weather alerts issued by the federal government, warnings have been an integral part of American history. Warning plans are also an important part of a nation's defenses. The lack of a warning for the attacks on Pearl Harbor and the World Trade Center are graphic evidence of how no warning can bring untold destruction, fear and panic. Developing a warning plan can save lives and property even in situations where it is impossible to stop the disaster from occurring.

Someone once said, "A national emergency is simply a collection of many local emergencies". It is also a basic precept of emergency management that the process begins at the incident or local level. From local plans, state and even national plans can be extrapolated for the purposes of planning warning strategies and for overall warning coordination. The purpose of this guide is to outline how to develop an effective warning plan at the local level using the assets available in your local community. The plan would include procedures agreed upon by the broadcast and cable industries, the National Weather Service (NWS), and the local area governments to issue emergency information and instructions in threatened or actual emergencies. Authority rests in Title 47, Code of Federal Regulations (CFR), Part 11, as amended February 22, 2002, Federal Communications Commission (FCC), Emergency Alert System (EAS), as pertains to Section 11.21, State and Local Area Plans and FCC Mapbook. These procedures are prepared by the Local Emergency Communications Committee (LECC). LECC membership includes the above entities and other interested organizations and individuals.

Acceptance of or participation in the plan shall not be deemed as a relinquishment of program control by broadcasters and shall not be deemed to prohibit a broadcast licensee from exercising independent discretion and responsibility in any given situation. Broadcast stations transmitting emergency communications shall be deemed to have conferred rebroadcast authority. The concept of management of each broadcast station exercising discretion regarding the broadcast of emergency information and instructions to the general public is provided by FCC Rules and Regulations, Part 11. These procedures shall be considered an appendix to, and part of the State EAS Plan. Since this plan includes the use of various communications facilities, it must be reviewed and approved by the FCC.

Development of this plan will focus on using the Specific Area Message Encoding (SAME) digital protocol as used on NOAA Weather Radio (NWR) and the EAS as published in the 47 CFR, Part 11, Section 11.31. These two systems use a common digital protocol on a nationwide basis. The equipment for both of these systems can serve as the core building block for a local warning system or to act as the local element of a state or national warning system. This is possible because of the monitoring capacity that has been built in to all FCC certified EAS equipment. While EAS is the nation's broadcast and cable warning system, some areas may also have different unique systems available for warning the public. For example, the Nuclear Regulatory Commission (NRC) requires nuclear generating facilities to install, maintain and test siren and other warning systems near their plants. Nuclear plant licenses state that licensees must be able to warn local residents 24 hours a day, seven days a week. So nuclear plants may have a siren system, a telephone alerting system for the area, or have NWR alert receivers in the nearby homes, as well as a method to activate EAS.

Since we do not have either a single warning protocol or a single technology for conveying warnings to all concerned parties, the newly formed Partnership for Public Warning (PPW) is studying the use of a national standard for alert and warning message format, terminology and technology. This standard will be backward compatible with SAME and EAS, and be capable of working with other legacy systems as well. And, as new protocols and warning standards are developed along with new digital radio and television services, they can be included in updates of local, state and national EAS plans. This is possible because certain parts of a local plan, such as local area boundaries, assets, communications links, emergency personnel and facilities, etc. do not change appreciably. Appendix A is a list of web sites that contain preparedness and emergency planning information. If your local area already has a warning plan, review it based on the information in this paper.

## **Initial Meeting**

The initiative to convene a planning meeting can come from several groups or individuals. Emergency management, state and local government, police, NWS, the broadcast and cable industries, and private industry, all have a stake in an effective warning plan. It is important that an initial meeting be held to get the planning off the ground and for participants to get acquainted. Find a meeting site in a central location that can be thought of as neutral ground by all invitees. Examples include local government facilities, libraries, schools, media facilities, hotels, etc. Letter invitations are best but e-mail and telephone contact are also useful. Before holding the meeting, it is a good idea to determine if the existing broadcast station(s) serving as the key EAS source(s) for the local area will be able to attend the meeting and that they are prepared to continue to volunteer in that capacity. Otherwise, a new source will need to volunteer. Follow-up meetings on a regular scheduled basis are necessary to finalize the plan, acquaint new participants and update the plan.

## **Participants**

Invitees to the meeting should include the following groups: local emergency management which may be a stand-alone group or individual, or exist in the form of police, fire, or elected officials; NWS personnel (Warning Coordination Meteorologist and Meteorologist in Charge); all broadcasters and cable operators including any local chapters of the Society of Broadcast Engineers (SBE) and the Society of Telecommunications Engineers (SCTE); local FCC personnel; local internet providers, telephone company personnel, state and federal officials, and key local civic and industry representatives. Invitees should also include representatives from local nuclear power plants, chemical plants, federal facilities with hazardous materials, and major railroad and highway arteries.

## **Area Boundaries**

It is necessary to define the boundaries of the local area. The local area can be as small as a city or as large as several counties. Factors that can define the boundaries include: the warning area of the local NWS office, the local area jurisdictional boundaries, the location of facilities such as a nuclear power plant, chemical plant, government facility, highways, waterways, dams, etc. Other factors can be the coverage area of local broadcast stations or the service area of cable systems. Once the area boundaries have been defined, it is important that the local broadcast stations and cable systems set up their EAS equipment to transmit only those warnings that have a direct impact on their audiences. Above all, make sure that the entity that has the legal responsibility for local warnings is identified. County or city codes should provide this information. Failing to identify the top level warning agency in the area could mean that the local plan could be in conflict with actual emergency practices for emergency management requests such as evacuation orders.

## **Assets**

The next step in plan development is to catalog the assets of the area. Assets such as a communications link between the sources of emergency information and the public. For instance, the municipal water system may have an extensive radio system that could be used as a wireless backbone between the civil warning center and the key EAS broadcast station(s). Asset holders include: NWS facilities, 911 centers and Emergency Operating Centers (EOCs), police and fire communications, radio and television stations, cable systems, local internet nodes and servers, paging companies, wire and wireless telephone and internet providers, private industry communications, and any state or national government facilities that can be identified. It is important that the representatives in charge of these assets recognize their role and participate in the development of the plan. Without their participation, segments of the community may not receive warning information on a timely basis.

## **Authorities**

Compile a list of who is responsible for certain actions. NWS is responsible for initiating weather warnings. Local civil authorities are usually responsible for issuing notices to the public for evacuations and for other public protection actions. Depending on geography and other factors, in some cases this civil warning authority may actually rest with state officials. Federal authorities are vested with certain powers within federal jurisdictions but they do not have authority over local or state jurisdictions. Develop a list of authorities who are authorized to request activation of the local EAS and list them in Appendix B. NWS personnel who have access to SAME equipment will be at the top of this list.

## **Sources of Warnings and Emergency Information**

As explained above, NWS is the source for weather warnings and other weather related information. Warnings and emergency information from civil authorities can come from several jurisdictions and even different states for local areas near state lines. It is very important in areas that have many jurisdictions that there be only one or at most two locations that act as clearinghouses for warnings and emergency information. Having one source for authoritative warnings increases public confidence. Multiple uncoordinated warning sources may confuse the public and make emergency information challenges like rumor control difficult. Some areas use their Emergency Operations Centers (EOCs) or 911 calling and dispatch centers as warning centers.

## Originating Warning Messages

EAS equipment can store two minutes of audio. Experience has shown that EAS warnings for clear and present danger should be shorter and be tagged with an announcement directing people at risk to stay tuned to a local source of live broadcast news. Emergency Public Information (EPI) becomes the vehicle and process that such live news sources use as the emergency plays out. Local emergency management should be trained in recording EAS warnings, previewing them, and playing them back within the EAS protocol.

Warning messages should contain as much information as necessary for the public to fully understand the message as well as what actions they need to perform to protect themselves and their property. SAME/EAS messages have four elements. First is the digital header. It contains coded information that relates to the who, what, where, and when components of the message. Second is the 8 to 10 second audio warning tones. For EAS messages, the warning tones are 853 and 960 Hz. For SAME messages, the warning tone is 1040 Hz. Third is the audio message which is limited to two minutes or less. This part of the message contains specific information and instructions. Fourth is the digital End of Message (EOM) code. The EOM code resets the equipment and provides broadcasters and cable operators with the signal to return to normal programming. Appendix C contains the SAME and EAS format with the four elements. Several examples of SAME/EAS warning messages are contained in Appendix D. Upon receiving a SAME message from NWS, EAS equipment at broadcast stations and cable systems (and EAS equipment located at other facilities) will retransmit the message as an EAS message with the 853 and 960 Hz tones.

## Warnings Versus Emergency Public Information

It is important to distinguish the difference between warnings and the process of delivering EPI. If you compared the process to a news story, warnings are just the headline. Warnings should be used to alert the public to specific clear and present danger when immediate public action is necessary to protect life and property. EPI includes the warning but tells the rest of the story. EPI should be used to provide more detailed information that people at risk need to know; increase the awareness of the public to a developing situation; provide more detailed information than was transmitted in the warning message; provide follow-up information after an event; or provide realistic reassurance at any stage before, during or after the emergency. An example of a service that distributes EPI is the Emergency Digital Information Service (EDIS) in California. Appendix A contains the EDIS web address.

## What Types of Emergencies Can Affect Your Local Area

SAME/EAS coding accepts the following Event Codes in the digital header portion of the message to describe a particular type of emergency. Select what codes might apply to your area and list them in Appendix E. The CEM, CDW, and LAE codes can be used for any civil emergency not listed. SAME/EAS messages can have up to 31 Locations Codes in a single message. SAME/EAS messages use a unique Location Code numbering system to identify each U. S. State, off-shore (marine) area, county, and part of a county. The numbering system used is the Federal Information Processing System (FIPS) system as described in U.S. Department of Commerce publication FIPS 6-4 and the list provided in 47 C.F.R. Part 11, Section 11.31(f). Appendix A contains the FIPS web address. Broadcasters and cable operators should check their EAS equipment to ensure it is capable of handling the Event codes and Location codes described in their local area plan and that the equipment is monitoring the correct local sources for emergency information. The following is a complete list of Event Codes as promulgated by the FCC on February 22, 2002. Broadcasters and cable operators are encouraged to upgrade their older EAS equipment to handle the new features outlined in the above FCC ruling. Upgrades are available from manufacturers for free or for a very minimal cost.

<u>Nature of Activation</u>	<u>Event Code</u>
Administrative Message	ADR
Avalanche Warning	AVW
Avalanche Watch	AVA
Blizzard Warning	BZW
Child Abduction Emergency	CAE
Civil Danger Warning	CDW
Civil Emergency Message	CEM
Coastal Flood Warning	CFW
Coastal Flood Watch	CFA
Dust Storm Warning	DSW
Earthquake Warning	EQW
Evacuation Immediate	EVI
Fire Warning	FRW
Flash Flood Warning	FFW

Flash Flood Watch	FFA
Flash Flood Statement	FFS
Flood Warning	FLW
Flood Watch	FLA
Flood Statement	FLS
Hazardous Materials Warning	HMW
High Wind Warning	HWW
High Wind Watch	HWA
Hurricane Warning	HUW
Hurricane Watch	HUA
Hurricane Statement	HLS
Law Enforcement Warning	LEW
Local Area Emergency	LAE
Network Message Notification	NMN
911 Telephone Outage Emergency	TOE
Nuclear Power Plant Warning	NUW
Practice/Demo Warning	DMO
Radiological Hazard Warning	RHW
Severe Thunderstorm Warning	SVR
Severe Thunderstorm Watch	SVA
Severe Weather Statement	SVS
Shelter in Place Warning	SPW
Special Marine Warning	SMW
Special Weather Statement	SPS
Tornado Warning	TOR
Tornado Watch	TOA
Tropical Storm Warning	TRW
Tropical Storm Watch	TRA
Tsunami Warning	TSW
Tsunami Watch	TSA
Volcano Warning	VOW
Winter Storm Warning	WSW
Winter Storm Watch	WSA

### **AMBER Messages**

The local plan can be used for the distribution of AMBER messages. First, it is very important to determine if the broadcasters and cable operators and the origination point for AMBER messages have the same EAS coding capabilities. In the near future a great majority of the above entities should be able to process the new Child Abduction Emergency (CAE) Event Code. Otherwise, the AMBER (CAE) messages originated by local authorities will not be widely distributed. This is especially true if the key local EAS source(s) cannot process the message from the origination point. As a temporary solution until the majority have the capability to process CAE, another code from the original list of codes in Part 11 should be used. Examples include the CEM and ADR codes. It is also advisable that the AMBER origination point and the origination point used by local authorities for other emergencies be the same. Authorities should also distribute the AMBER alert by any other distribution methods available. Faxing a picture of the abducted child to the wire services and television stations and providing follow-up information to the media is essential to completing the distribution process. Appendix D contains an example of an AMBER message using the CAE Event Code.

### **Authentication**

One method of authentication between officials and the media is personal recognizance. This can be accomplished through periodic meetings and through the exercise of the testing procedures developed in the plan. The use of code words is acceptable but it can be time consuming. Using protected communications links adds more protection. Dedicated telephone circuits, dedicated wireless links, and encrypted communications are preferable but they can be expensive. Areas should use the most secure communications links available between officials and the media. The code structure and unique transmission characteristics of SAME and EAS do provide some security. Confidential authentication procedures including unlisted telephone numbers should not be part of the public copy of the plan, especially if the plan is posted on the internet. Confidential procedures of the plan should be distributed to only those participants that have a need to know.

## **Public Distribution Systems**

There are several methods to distribute warnings and emergency information to the public and many ways for information to get to warning centers from those in charge of critical facilities. First, NWS issues weather warnings on NWR. Therefore, NWR should be monitored by all radio and television stations and cable systems in addition to those stations designated as key EAS sources. Second, local authorities may use sirens, pagers, wire and wireless telephone, private radio, etc. The point where such devices are activated may need to be linked to the key EAS broadcast station(s). Third, radio, television, and cable systems are required to have EAS equipment but they may have other systems available to alert their staffs. Some FM radio stations use the Radio Data System (RDS) to distribute messages to their audiences. It is important that all of these systems, NWR, EAS, local alerting systems, and RDS be used in a coordinated and cooperative manner and that warning information is consistent over all systems.

Since NWS messages sent on NWR use the SAME digital protocol and the SAME protocol and the EAS protocol are identical, it is highly recommended that local authorities purchase and install EAS equipment so that they can originate and receive EAS tests and messages. Appendix F contains a diagram of an arrangement of SAME and EAS equipment in a typical local area. Using the same equipment and message coding, or compatible equipment and coding, between NWS, the media, and local officials greatly increases the credibility of the messages as far as the public is concerned. In other words, everyone is saying the same thing at the same time. As an example, a tornado warning issued by NWS on NWR can be instantly decoded and retransmitted by the media even if their facilities are unattended. Local emergency managers can use this information to help them make possible evacuation orders or other requests of the public as EAS messages. Also, local officials can be alerted by their equipment. And, the digital portion of the SAME/EAS message can be reformatted for transmission on paging systems, cell phones, amateur radio, and e-mail on the internet.

## **Existing Radio Systems**

Almost every local area has radio system assets like those described above in Public Distribution Systems. However, there may also be other types of systems that are very unique to an area. Areas prone to air quality problems may have a radio system to announce and distribute air quality alerts. Highway signs can display information to alert motorists to traffic problems or weather events. Local jurisdictions including police and fire can have area-wide common emergency frequencies. Transit systems have communications systems linking their facilities including buses, stations, and operating personnel. All of these systems can play a unique role in alerting operating personnel and consequently the public.

## **Consumer SAME/EAS Equipment**

Several manufacturers sell NWR receivers to the public. These receivers are tuned to the local NWR frequency. They can be programmed to receive certain warnings for certain areas. The receivers will turn on when they receive the proper codes. EAS consumer receivers operate in the same manner except they are tuned to a radio or television station. The receivers will turn on immediately after receiving the proper codes. The first thing the consumer will hear is the warning tone followed by the audio message. There are also receivers that can be used on cable systems to alert cable subscribers. They can turn on and alert the subscriber even if the subscriber is not watching cable television. Consumers possessing RDS receivers can receive warning messages regardless of the features they are using with the receiver, such as a CD or tape player, as long as the FM station transmits the RDS emergency code followed by the EAS message. Promote the local plan to the public and encourage the public to purchase SAME/EAS and RDS consumer equipment.

## **Testing Procedures**

Periodic testing is one of the most important elements of a plan. Some plans may use telephone call up procedures with voice recognition and code words. These procedures can take time and usually help prove out the logic of local public safety officials purchasing and installing EAS origination equipment. Officials can also use their SAME/EAS equipment, or compatible equipment, to originate test messages for transmission to the media. SAME/EAS test messages sent to the media can be quickly retransmitted because of the automation features of the media's EAS equipment. Proper coding of the digital message portion of a SAME/EAS message is essential or the message will not be recognized by the receiving facility. Newer EAS equipment has computer based user friendly software for developing EAS messages and also can have pre-loaded warning announcements. Appendix D contains examples of SAME/EAS test messages. Tests may start on a scheduled basis and evolve to an unscheduled basis.

## **Updating Plans**

The data in some plans can become outdated even before the plans are signed and approved by officials. Broadcast stations change their call signs, officials come and go, and communications links change. It is best to divide parts of the plan into sections and then present each section on a separate page. Pages are replaced as the procedure or data change. Plan sections can include; assets, communications links, authentication procedures, activation procedures, authorized officials and codes, testing procedures, etc.

## **Summary**

Steps to develop an effective local plan include.

Convene an initial meeting with scheduled follow-up meetings.

Identify the participants, area boundaries and assets, responsible authorities, the sources of warnings and emergency information, what types of emergencies can affect your local area, select the appropriate Event and Location Codes and public distribution systems.

Even though SAME, EAS, RDS, and other communications protocols, can both deliver warnings and emergency information, investigate other systems that can be used to broadcast emergency information such as speed fax, internet, reverse 911, etc.

Develop authentication and testing procedures. SAME and EAS do provide some security by the coding of their messages and by their unique transmission characteristics.

Train personnel in using SAME/EAS, and other communications equipment.

Promote the local plan to the public and encourage the public to purchase SAME/EAS and RDS consumer equipment.

Select members to serve on the Local Emergency Communications Committee (LECC) including a Chair and Vice-Chair.

## **Appendixes**

Appendix A - List of web sites

Appendix B - List of officials authorized to activate the local area

Appendix C - SAME and EAS message format

Appendix D - Examples of SAME/EAS messages

Appendix E - List of SAME/EAS Event Codes and Location Codes to be used for the local area

Appendix F - Diagram of an arrangement of SAME and EAS equipment in a typical local area

Appendix G - LECC members and approvals and congruencies

## Appendix A - List of web sites

Federal Communications Commission - [www.fcc.gov/eb/eas](http://www.fcc.gov/eb/eas)

Federal Emergency Management Agency - [www.fema.gov](http://www.fema.gov) (click on Preparation & Prevention)

National Weather Service - [www.nws.noaa.gov](http://www.nws.noaa.gov) (click on Weather Radio)

Partnership for Public Warning - [www.partnershipforpublicwarning.org](http://www.partnershipforpublicwarning.org)

Federal Information Processing System (FIPS) - [www.itl.nist.gov/fipspubs/fip6-4](http://www.itl.nist.gov/fipspubs/fip6-4)

National Emergency Management Association (NEMA) - [www.nemaweb.org](http://www.nemaweb.org)

Society of Broadcast Engineers (SBE) - [www.sbe.org](http://www.sbe.org) (click on EAS Information)

Society of Cable Telecommunications Engineers (SCTE) - [www.scte.org/standards](http://www.scte.org/standards) (click on standardssubcommitteeseas)

Emergency Digital Information Service (EDIS) - [www.edis.ca.gov](http://www.edis.ca.gov)

## Appendix B - List of officials authorized to activate the local area

<u>Official</u>	<u>Jurisdiction</u>	<u>Communication Link</u>
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## Appendix C - SAME and EAS message format

DIGITAL HEADER	ALERT TONE(S)	AUDIO MESSAGE	END OF MESSAGE
//////// //	-----limited to 2 minutes 1040 Hz or 853 Hz and 960 Hz	////////	//////// //
			NNNN NNNN NNNN

## Appendix D - Examples of SAME/EAS messages

Required Weekly Test message sent by all radio and television stations and cable systems

ZCZC-EAS-RWT-011001-024009-024017-024021-024031-024033-024037-051013-051043-051047-051600-051610+0030-1141550-WTOP

A required weekly test (RWT) has been issued for the following counties/areas: District of Columbia (011001) Calvert, MD (024009) Charles, MD (024017) Frederick, MD (024021) Montgomery, MD (02431) Prince George's, MD (024033) Saint Mary's (024037) Arlington, VA (051013) Clarke, VA (051043) Culpeper, VA (051047) Alexandria City, VA (051600), Fairfax City, VA (051610) at 11:50 AM (1550) on April 24 (114), 2002 effective until 12:20 PM (+0030) message from WTOP AM

Required Monthly Test message sent by a key EAS broadcast station

ZCZC-EAS-RMT-011001+0030-1140742-WTOP

A required monthly test (RMT) has been issued for the following counties/areas: District of Columbia at 3:42 AM (0742) on April 24 (114), 2002 effective until 4:12 AM (+0030) message from WTOP AM

Tornado watch message sent by the National Weather Service

ZCZC-WXR-TOA-051113-051153-051187+0600-1221838-KLWX/NWS

The National Weather Service (WXR) has issued a tornado warning (TOA) for the following counties/areas: Madison, VA (051113) Prince William, VA (051153) Warren, VA (051187) at 2:38 PM (1838) on May 2 (122), 2002 effective until 8:38



PM (+0600) message from KLWX/NWS

Child Abduction Emergency (AMBER) message sent by civil authorities using the new EAS codes

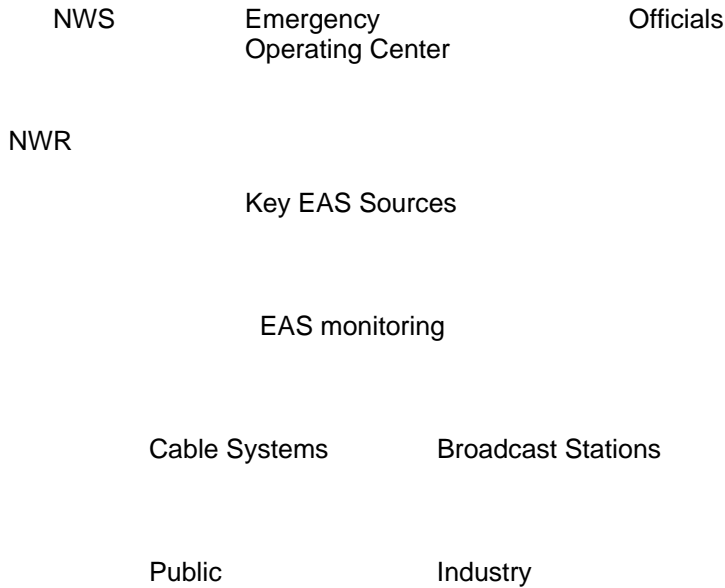
ZCZC-CIV-CAE-024009-024017-073535+0600-1241938-CALVPOL

Civil Authority (CIV) has issued a child abduction emergency (CAE) for the following counties/areas: Calvert, MD (024009) Saint Mary's, MD (024017) Chesapeake Bay adjacent to Calvert County (073535) at 3:38 PM (1938) on May 4 (124), 2002 effective until 9:38 PM (+0600) message from Calvert Police

**Appendix F - List of SAME/EAS Event Codes and Location Codes to be used for the local area**

<u>Event Code with accompanying Location Code(s)</u>	<u>Originating Source of Code</u>
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**Appendix E - Diagram of an arrangement of SAME and EAS equipment in a typical local area**



**Appendix G - LECC members and approvals and congruencies**

<u>Member</u>	<u>Signature</u>	<u>Organization</u>	<u>Phone/e-mail</u>
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