VIII. The Partnership for Public Warning (PPW)

A. General Information

The Partnership for Public Warning (PPW) was a think tank, formed shortly after September 11th, which consisted of leaders in the field of disaster warnings and information. The PPW was a not-for-profit, public-private partnership governed by an elected Board of Trustees representing local and state governments, private industry and the non-profit community. Federal agencies participating in PPW included the Department of Homeland Security, Department of Commerce and Federal Communications Commission. For several years the PPW operated with the mission of promoting and enhancing efficient, effective, and integrated dissemination of public warnings and related information.

Although the Partnership for Public Warning only existed for a few years, the amount of valuable information that they produced and disseminated was considerable. One of the legacies of the PPW is a website, which is considered by emergency management professionals to be "one of the best single sources of information on public warning." MITRE corporation maintains this website, which can be accessed at http://www.partnershipforpublicwarning.org/ppw/

B. The PPW's recommendation to the FCC & Complete 2004 Report to the FCC

"There is a wide and growing array of technologies for alerting and informing individuals with various disabilities. The range of special-audience requirements is so broad that it seems futile to try to address them all with any one technology. Thus PPW believes that the creation of a "warning Internet" to deliver consistent messages into various specialized warning systems is the only viable approach to this challenge."

The PPW's Complete 2004 Report to the FCC

Secretary Federal Communications Washington, DC

In The Matter of Review of the Emergency Alert System

EB Docket No. 04-296 Notice of Proposed Rule Making Adopted: August 8, 2004

Released: August 12, 2004

SUBJECT: Partnership for Public Warning (PPW) Comments Concerning the FCC Review of the Emergency Alert System

On behalf of the Partnership for Public Warning, I am pleased to submit the attached comments in response to the Notice of Proposed Rulemaking (EB Docket No. 04-296) regarding the Emergency Alert System.

The Partnership for Public Warning (PPW) is a non-profit, public-private partnership established to improve America's ability to warn and inform citizens during times of emergency. Those who participated in the development of the attached comments include representatives from all major stakeholder groups – local government, state government, private industry, non-profit organizations and representatives of special interests.

Please do not hesitate to contact me should you have any further questions.

Respectfully yours,

KENNETH B. ALLEN Executive Director Partnership for Public Warning

1. Introduction

The Partnership for Public Warning is pleased to provide these comments in response to the Federal Communications Commission Notice of Proposed Rulemaking on the Emergency Alert System (EB Docket No. 04-296, adopted August 4, 2004).

The Partnership for Public Warning (PPW) is a non-profit, public-private partnership established to save the lives and property of people at risk by improving the nation's alert and warning capabilities. As the only national organization dedicated to public warning, PPW provides an objective, consensus-based forum where all stakeholders – both public and private – are working together to improve the nation's public warning capabilities. Participants in PPW include local government, state government, federal agencies, the private sector, non-profit community, academia, special needs groups and the public.

At the outset, PPW wishes to commend the Commission for its willingness to undertake this inquiry. Over the past several years we have seen the emergence of new threats to the American public. These threats, coupled with the changing demographics of our society, pose new challenges in alerting and informing the public during times of emergency. Although the Emergency Alert System (EAS) was established in 1994 and implemented in 1997, little effort has been made to ensure that it has kept pace with the changing threats, technologies and demographics. The Commission's action in seeking public comment is an important first step in upgrading the EAS.

As noted in the Commission's inquiry, PPW has conducted an assessment of the EAS and provided recommendations to make it more effective. While we intend to address the specific questions asked by the Commission, we believe it is appropriate to reiterate our recommendations – which remain valid.

"The Partnership for Public Warning recommends that the Department of Homeland Security take the lead in creating an effective national public warning capability.

Consistent with this leadership role, DHS should, in concert with the appropriate federal agencies and other stakeholders, take the following steps to strengthen the EAS:

a. Provide strong management oversight of the entire EAS system and clear guidance on key issues such as new technologies, state plans, standards, training and public education.

b. Upgrade and improve the Primary Entry Point (PEP) system.

c. Update and clearly designate EAS management, operation and oversight responsibilities among the appropriate federal agencies and other authorities.

d. Provide funding and resources to support and operate the EAS system.

e. Work cooperatively with all stakeholders through a public-private partnership to develop standards, policies and procedures to integrate the EAS into a comprehensive national public warning capability.

f. Maintain the existing EAS and fully investigate all proposed improvements compatible with EAS."

g. For further information regarding the above recommendations and the challenges facing the EAS, see the PPW Report "The Emergency Alert System: An Assessment" (PPW Report 2004-1, February 2004).

We urge the FCC and other appropriate agencies to adopt the above recommendations. At the same time, we wish to emphasize that the nation needs a comprehensive national public warning capability. Creating such a capability must begin with our legacy systems – the EAS and NOAA Weather Radio (NWR). However, such a capability must also include other technologies and services that now exist to deliver alerts and warnings. Such a capability must also recognize that warning is primarily a responsibility of local government. As PPW has previously stated, creating an effective warning capability requires standards, policies, education, collaboration and leadership. In addition to its work on EAS, PPW has developed a national strategy and plan for creating an effective national public warning capability. We urge the Commission to review this strategy and plan as it considers changes in the EAS. For further information, see "A National

Strategy for Integrated Public Warning Policy and Capability (PPW Report 2003-1, May 2003) and "Public Alert & Warning – A National Duty, A National Challenge: Implementing the Vision" (PPW Report 2003-4, September 2003).

Finally, we wish to emphasize the willingness and desire of the Partnership and its members to assist the FCC and other federal agencies in addressing this important issue. PPW was specifically created to provide a forum where government and industry work together to improve the nation's public warning capability. We remain committed to that goal. We believe that a public-private partnership is vital if we are to develop an emergency alert and warning capability that can reach people wherever they are, whatever the time of day or night and whatever their special needs. PPW provides the forum for that partnership.

There is one final point that we wish to make before addressing the questions raised by the Commission. The Commission has posed some difficult and thought-provoking questions. This is a complex set of issues and there is no single path to creating a more effective national public warning capability. It is impossible to fully explore and answer these questions within the standard framework of the Notice of Proposed Rule Making process. In addition to this inquiry, we believe that it would be valuable to host a meeting of interested stakeholders to discuss these questions in detail. Such a meeting would be consistent with the Negotiated Rulemaking Act. PPW is uniquely qualified to do this and would be pleased to host such a meeting on behalf of the Commission.

2. Comments

PPW believes that there are many recommendations offered in its comments that the Commission can implement immediately without additional authorities and without any significant additional expense.

Paragraph 3, Page 2

Along with its primary role as a national public warning system, EAS and other emergency notification mechanisms, are part of an overall public alert and warning system, over which the Federal Emergency Management Agency (FEMA) exercises jurisdiction. EAS use as part of such a public warning system at the state and local levels, while encouraged, is merely voluntary. Thus, although Federal, state, and local governments, and the consumer electronics industry have taken steps to ensure that alert and warning messages are delivered by a responsive, robust and redundant system, the permissive nature of EAS at the state and local level has resulted in an inconsistent application of EAS as an effective component of overall public alert and warning system. Accordingly, we believe that we should now consider whether permissive state and local EAS participation is appropriate in today's world.

We note that the EAS was established as a means for the president to communicate with citizens during times of emergency. However, it has never been used for that purpose. On the other hand, local, regional and state governments use the EAS many times each year to warn and inform citizens of local threats and emergencies. Yet, as the Commission notes, local and state use of EAS is voluntary. We do not believe that mandating state and local participation will enhance the effectiveness of EAS or insure success. Therefore, we believe that state and local participation should, for the time being, remain voluntary. On the other hand, PPW believes that if EAS is properly supported, enhanced and marketed, a greater spirit of voluntary cooperation will follow.

Before rushing to judgment on whether local and state participation in EAS should be mandatory, we urge the Commission to undertake two initiatives. First, undertake an initiative to assess the use of EAS by local and state governments and to assess its effectiveness. Success must be judged on how well the system performed before, during and after a disaster and the actions people actually take to protect themselves. A formal after action report process is needed to judge success. PPW suggests that we need to assess the protective actions people at risk take as a result of the warnings they receive. Second, undertake a collaborative process to discuss this issue with local and state governments, broadcasters, cable operators and others who would be affected by a

requirement that participation in EAS be mandatory. The federal government should not mandate the use of EAS without fully consulting with all affected parties. PPW would be pleased to host such a collaborative process. The collaborative process recommended in the above paragraph would permit the affected stakeholders to work together to address the many questions that would emerge if participation in the state and local EAS were made mandatory.

Such questions include the following. Presently, mandatory participation in the national level EAS is accomplished through the requirement that EAS messages containing the EAN event code override all the programming of broadcasters and cable operators. How will the government go about mandating state and local participation? Does requiring state and local EAS participation mean requiring broadcaster and cable operator participation in EAS planning workshops? Does it mean requiring re-transmitting EAS messages with certain state and local EAS event codes? What about state and local emergency management participation? Enforcement of the state and local mandated codes will prove even more difficult in those areas without EAS plans or in those areas with old plans.

While we do not support a requirement that local and state participation in EAS be mandatory, PPW does support more active federal leadership in coordinating the use of EAS by local and state governments. Under the status quo the federal government's interest in EAS is confined to ensuring that the system is available for use by the president during times of emergency. No federal agency is responsible for ensuring that the system is developed and managed in a manner that makes it useful to local and state governments. For example, several effective EAS state and local plans have been developed voluntarily. But many more would be developed if the federal government played a much more active role in requiring the development of such plans. When EBS plans were first being developed in the mid 1970s, the FCC, NWS and DCPA (now a part of FEMA) were very pro-active in developing plans. With the help of the SECC Chairs, they held workshops in every state that facilitated the planning process. There were six workshops in Texas alone. These efforts culminated with every state having a plan and

over 400 local plans being implemented. This same effort is needed today for EAS. Federal leadership of a collaborative process that involves all stakeholders would do much to enhance the effectiveness of EAS.

Paragraph 4, Page 2

There are similar questions about the technical capabilities of EAS. For example, since it relies almost exclusively on delivery through analog radio and television broadcast stations and cable systems, is EAS, in the current communications universe, outdated? How could it be made more efficient? Should it be phased out in favor of a new model? If so, what would the new model look like? If a new model were to be adopted, what legal and practical barriers would have to be overcome to ensure its implementation and effectiveness? Would a new model require legislation from Congress or an Executive Order? What technologies should serve as the basis for such a model? Alternatively, should EAS requirements be extended to other services (e.g. cellular telephones)?

EAS messages can be easily converted for use with digital transmission systems, i.e. satellite, cell phone, Internet, etc. This was demonstrated in the field tests conducted in Denver and Baltimore during the development phase of EAS. It was always intended that EAS messaging be expanded to other services albeit on a voluntary basis, and that a wide range of EAS-aware devices for the general public would follow.

One way to enhance EAS would be to have the audio portion of the EAS message in digitized form and in a standardized text packet. The packet could be transmitted at the end of the two-minute audio window of the EAS message and before the end of message digital code. This would allow for the display of the text of the audio on television screens and provide hearing-impaired viewers with more detailed information about an emergency. Others have suggested text solutions that would not interrupt on-air

programming. PPW believes that such solutions should be investigated since they might offer the potential to foster development of new types of personal warning devices, or devices that could be integrated with existing radio and TV receivers.

New solutions should be standardized and open. As an example, we draw the Commission's attention to the Common Alerting Protocol (CAP) developed under PPW's leadership. CAP is the first national message format standard for transmitting warning messages. Implementation of the CAP standard at the origination points of emergency messages would be a significant improvement. There would be an expansion to the number of existing CAP-aware or CAP-able applications, warning devices and appliances. CAP is compatible with the existing NOAA SAME/EAS protocol. The testing and implementation of the Advanced EAS Relay Network (AERN) with CAP is recommended. AERN can augment existing local and regional EAS relay measures with a secure digital network based on non-proprietary CAP data as well as "streaming" audio. It can make possible activation of not just EAS, but also any other alerting technology with a single, coordinated warning message. AERN combines the security and robustness of data transmission with the flexibility and interoperability of a standards-based communications. AERN is not a product; it is an open source architecture that can be implemented by any vendor or system integrator without licensing or patent restrictions and without significant changes to existing government regulations or policies.

Any new warning model would face the same implementation and training problems that EAS has already overcome in some areas of the country. Technology is not the problem. Developing effective plans and assessment reports, providing resources, training and testing are the methods to solving the problems.
With regard to other services, Section 11.43 of the EAS rules specifies that entities can voluntarily participate in the national EAS. The FCC, in coordination with FEMA, needs to be more pro-active in seeking the voluntary participation of the major national networks in the national level EAS. The networks would be a low cost enhancement even if they participated in an ancillary support or reinforcement role. Several national broadcast networks, wire services and cable program suppliers were volunteers in the

EAS Emergency Action Notification (EAN) Network until 1995. Since then, only National Public Radio (NPR) has agreed to voluntarily participate in the distribution of national level EAS messages. Adding these networks will greatly expand the reach and reliability of the national level EAS. Other technologies that greatly expanded in the late 1990s, such as the Internet and cell phones, should be integrated into a total warning structure that includes EAS and NWR.

Paragraph 9, Page 4

The Commission, in conjunction with FEMA and the NWS, implement EAS at the federal level. The respective roles currently are based on a 1981 Memorandum of Understanding between FEMA, NWS, and the Commission, on a 1984 Executive Order, and on a 1995 Presidential Statement of Requirements. In addition, State Emergency Coordination Committees (SECCs) and Local Emergency Coordination Committees (LECCs) develop state and local EAS plans.

The 1981 MOU between the FCC, FEMA, NOAA NWS, and the FCC National Industry Advisory Committee (NIAC) reflected the operational capabilities of EBS. It needs to be updated to reflect the capabilities of EAS. The key objective of the 1981 MOU was to achieve capabilities at the state and local level by which EBS could be used effectively to disseminate warning notifications and emergency public information in relation to natural disaster, manmade disaster, and attack. Under the MOU, state and local EBS plans were developed to ensure that the federal assets at the state and local levels worked together to form effective warning networks. The assets included were the EBS equipment located at broadcast stations, the NAWAS equipment located at emergency management offices and the NAWAS and NWR equipment located at NWS offices. The new MOU should reflect how the current federal assets located at the state and local levels, NAWAS, EAS

equipment at broadcast stations and cable systems, NOAA Weather Radio, and private warning systems would be integrated into a total warning structure.

Although DHS/FEMA conducted some EAS training of emergency management officials in the mid 1990s, much more needs to be done. The FEMA Civil Preparedness Guides (CPGs) that explain EAS and warning systems to emergency management should be updated and republished. At one time FEMA conducted EAS workshops at its National Emergency Management Training Center, at its Regional Centers and over its satellite educational network. These programs should be funded, restarted and managed by DHS.

Paragraph 15, Page 6

SECCs and LECCs. State Emergency Communications Committees (SECCs) and Local Emergency Communications Committees (LECCs), comprised of emergency management personnel and volunteers from industry, may be established in each state and territory to prepare coordinated emergency communications systems and to develop state and local emergency communications plans and procedures for EAS and other Public Alert and Warning (PAW) systems the state may use in combination with EAS. These committees also establish an authentication procedure and establish the date and time of the required monthly EAS tests.

PPW believes that the SECCs and LECCs -- the key interface with the state and local levels of emergency management -- are critical to the success of EAS. PPW submits that EAS works best where the SECCs and LECCs are strong. The FCC needs to better recognize the efforts of the State and Local Emergency Communications Committees. Possibilities include publishing their accomplishments in News Releases, recognizing them at meetings and other Commission public service forums, and hosting workshops so they can exchange ideas.

We do not understand why the FCC appointed the SECC Chairs for over 30 years but then recently decided to stop appointing them. PPW believes that there should a clear and responsible chain of command and control for the key people who volunteer their time and effort to make EAS work. There must be a process in place to make sure that this vital volunteer effort has proper oversight.

A DHS funded and managed SECC and LECC assistance program would provide sorely needed training and give all levels of government feedback to gauge the effectiveness of warnings. Because of personnel turnover in the broadcast and cable industries, this must be done on an ongoing basis.

Paragraph 17, Page 7

The United States is divided into approximately 550 EAS local areas, each containing a key EAS source, called the Local Primary One (LP-1). The LP-1 monitors its regional PEP station for Presidential messages, and serves as the point of contact for local authorities and NWS officials to activate EAS. Other stations and cable systems in the area monitor their LP-1 station, and if a Presidential message is sent, they are required to air the message received from their LP-1 station. For non-Presidential messages, these monitoring stations and cable systems may carry the message at their discretion. Local Primary sources are assigned numbers in the sequence they are to be monitored by other broadcast stations in the local area (i.e., LP-1, 2, 3, etc.). Broadcast stations and cable systems are required to monitor at least two EAS sources for Presidential alerts, as specified in their state EAS plans. As we discuss in paragraph below, however, the number of households that actually are watching or listening to these broadcast and cable outlets at any point in time is often relatively small.

The Primary Entry Point (PEP) system was designed in the 1980's as a last resort system and backup to the EAN Network. It was designed for situations when the President would be cut off from superior and traditional means to communicate emergency information to the public. When the EAN Network was dissolved in 1995, the PEP system was all that was left. In addition to the improvements mentioned in our Paragraph 4, Page 2 answer,

certain other improvements need to be made to PEP. This will insure that a Presidential message transmitted on the PEP system has the greatest chance of reaching as much of the populace as possible and as fast and reliably as possible. PEP should be expanded to include additional entry points as well as the major national broadcast and cable networks mentioned above. PEP communication links from FEMA must be robust and redundant. Each State EAS entry point must be able to reliably receive a PEP message. And, most important, each state EAS plan must insure that a PEP message (and any state level EAS message) is reliably received by all of the broadcast stations and cable systems operating in the state. Ongoing assessments must be done to verify the reliability and dependability of all state EAS Plans. The public instinctively turns to radio, television and cable television for emergency information during disasters. Therefore, they will continue to serve a vital role in emergency preparedness, response and recovery. Also, radio is the main reliable last resort disseminator of emergency information during large-scale power outages to people with car radios and battery powered portable receivers. Witness the role of radio in providing emergency information to the public during the New York City blackout and the recent hurricanes. PPW certainly does not want to minimize the role of television in the emergency public information (EPI) process. During these disasters, many television stations worked hand-in-hand with radio stations that were still transmitting to provide vital emergency information to the public. The broadcasting community, like many other segments of our society, can and do come together to help when the chips are down.

Paragraph 18, Page 7

State and local emergency operations managers can request activation of EAS for state and local public alert and warning. State-level EAS entry points are designated as State Primary and State Relay. State Primary Entry Points can be broadcast stations, state emergency operation centers, or other statewide networks, and can act as sources of EAS state messages originating from the State Governor or a State Emergency Operations Center. State Relay sources relay state common emergency messages into local areas. Local Primary sources are responsible for coordinating the carriage of common

emergency messages from sources such as the NWS or local emergency management offices as specified in EAS local area plans.

The PPW EAS Assessment Report points out that the connectivity between local officials and the local EAS is fragmented at best. This link is critical because it enables local officials to broadcast local emergency alerts to the local populace. In some recent major local disasters, the national media provided more local emergency information to the populace outside the disaster area than was available to the populace directly affected by the disaster. In these instances, local radio stations with emergency power were the only link to the populace in the disaster area. DHS needs to insure that local emergency officials have all the resources they need to reliably communicate with the public during disasters. PPW believes a formal, funded national EAS and Emergency Public Information (EPI) needs assessment should be conducted as soon as possible.

Paragraph 22, Page 8

PPW has recently recommended that a single federal entity, specifically DHS, should take the lead in creating and overseeing an effective national public warning program. PPW also noted that DHS, with other federal agencies and stakeholders, should update and clearly designate EAS management, operational and oversight responsibilities among the appropriate federal agencies and other authorities. Additionally, MSRC has recommended that a single federal entity should be responsible for assuring: (1) that public communications capabilities and procedures exist, are effective, and are deployed for distribution of risk communication and warnings to the public by appropriate federal, state and local government personnel, agencies and authorities; (2) that lead responsibilities and actions under various circumstances are established at federal, state and local levels within the overall discipline of emergency management; and (3) that a national, uniform, all-hazard risk communication warning process is implemented from a public and private

consensus on what best meets the needs of the public, including people of diverse language and/or with disabilities, including sensory disabilities. MSRC and PPW also assert that effective delivery of emergency information to the public should be achieved through a public/private partnership that makes coordinated use of mass media and other dissemination systems. We seek comment on PPW's and MSRC's suggestions. Would legislation be required to effectuate the recommendations described in this paragraph?

PPW has already recommended that the Department of Homeland Security take the lead in developing a national warning program. Such a national program, however, cannot and should not be developed without the full participation of all stakeholders. PPW has recommended – as had every other major report that looked at public warning – that a public-private partnership be established to provide a forum where stakeholders could work together in a collaborative process. These stakeholders include other federal agencies (e.g. FCC and Department of Commerce), local, state and tribal governments, private industry, broadcasting industry, special interests (e.g. the deaf and hard of hearing) and the public. The Partnership for Public Warning was created to provide such a collaborative forum and we are pleased to note that all the major stakeholders have participated. We reiterate our offer to assist the Commission, DHS and other federal authorities in developing an effective national public warning capability.

PPW does not believe it is necessary to enact legislation to implement major improvements in EAS and move towards a more effective national public warning capability. Legislation would be valuable only if it provided a clear congressional mandate for creating a more effective public warning capability and providing the funding to make it a reality.

Paragraph 23, Page 9

We seek comment regarding the respective roles of the federal government departments and agencies involved with the implementation of EAS, specifically the Commission, DHS, FEMA and NOAA. Should each of these agencies remain involved? If not, what

specific changes in roles should occur? For changes to occur, would the Commission or other federal entity have to recommend that current legal authorities be updated or supplemented? Should a new public/private partnership be created to ensure the effective and efficient delivery of emergency information to the public and, if so, how should this partnership be structured and what should its responsibilities be? What federal agency should be its primary point of contact? Should a particular federal agency take the lead role for the future EAS?

Every report that has studied the issue of public warning has recommended a public-private partnership. We believe that recommendation remains valid. PPW was established by state and local emergency managers to create that partnership. PPW remains available to assist the federal government and other interested stakeholders. There is no need to develop a new partnership. Funding is critical to ensure that work projects are completed. We note that the PPW national strategy can be implemented in less than 24 months at a cost of less than $10 million. PPW believes that one useful distinction is between the maintenance of warning facilities like EAS and the actual use of those facilities to issue warnings. The historic lead role of the FCC in enforcing the maintenance of the EAS infrastructure has been complicated by the assignment of other roles, especially funding, to other agencies. At the same time, the focus of the FCC's mass-media regulatory activities has tended to isolate EAS from other warning systems, thus unintentionally impeding the development of an integrated national warning architecture.

PPW believes that lead responsibility for EAS, as part of an integrated national warning capability, should lie with an agency involved in the actual warning process. The FCC should and must remain involved in a supporting role as regards regulation, review of licensee emergency plans, and enforcement within its purview. A number of federal departments and agencies may have occasion to use EAS (and other warning systems) in discharging their responsibilities. PPW believes there is a need for a single well coordinated operational mechanism for disseminating warnings from federal agencies in a timely, accurate and effective manner. However, safeguards must be provided to

ensure that such a mechanism does not become a bottleneck or, worse, a cause of single point failure. Its strength must come from emergency managers at local and state warning centers who now recognize that information, including warnings, is a resource that is at their disposal that can help manage any emergency to a faster and better conclusion.

We believe the FCC, DHS and NWS now have most of the legal authorities necessary to develop, regulate, implement and oversee EAS, NWR and other warning systems. DOJ has some role based on its legal authorities and AMBER funding. PPW believes it would be inappropriate for any of these agencies to disengage either from EAS or from the larger national warning architecture. One overall lead agency should be designated and empowered to ensure that crucial issues do not fall between the "cracks in the floor" of emergency management, or in its jurisdictional foundations.

With regard to federal advisory committees, the FCC provides administrative support to MSRC and FEMA funds PEPAC. MSRC, PEPAC and PPW all have similar goals. PPW is unique in that it includes all major stakeholder groups and has addressed the entire spectrum of issues associated with public alerting and warning. A public/private partnership, with a goal to integrate warning across the board, would be able to research and provide recommendations regarding EAS, PEP, private initiatives, technology advancements, disability issues, planning, training, and more. It would provide recommendations concerning training, education, funding, resources, operations, regulations, and more, to those agencies responsible for warning.

Such a partnership exists in the form of the national non-profit Partnership for Public Warning (PPW). However, PPW has been hampered in its pursuit of these goals by the lack of a single federal agency with unambiguous authority for supporting PPW and for applying identified best practices in public warning to federal, and by funding and guidance, to state and local, programs. PPW believes that DHS has the necessary authority to provide leadership in the public warning arena. Legislation, would be

helpful – but not essential -- to unambiguously delineate DHS's responsibility in this area, which until now has been more implicit than explicit.

Paragraph 24, Page 9

We also seek comment about several aspects of state and local EAS. First, we note that some parties assert that voluntary (as opposed to mandatory) participation in state and local EAS alerts impairs the credibility of the entire EAS. They claim that it makes no sense to mandate participation only on a national level in a system that has never issued a Presidential alert and is instead used to deliver vital information about life-threatening local, state, and regional events. These parties believe that the voluntary nature of participation in state and local EAS alerts also makes it difficult to find enough dedicated people to participate with system implementation. As we noted in the Localism NOI, the dissemination of emergency information is a critical and fundamental component of broadcasters' local public service obligations, and we accordingly seek comment on whether voluntary participation in EAS is consistent with those obligations. We seek comment on whether the Commission should adopt rules to require broadcasters to make their facilities available to local emergency managers? If so, what should be the nature and scope of any such rules? In their comments, parties should address the issue of whether there would be adverse effects from imposing some uniform requirement on broadcasters rather than allowing them to continue to make voluntary arrangements with local officials? Conversely, should incentives be provided to encourage the participation of broadcasters and cable operators? What incentives could be provided? To avoid what broadcasters and cable operators might view as a burdensome level of program interruptions, should there be a federal rule establishing a standard regarding when state emergency managers may and must activate EAS and, if so, what should that standard be? Should use of any of the existing voluntary EAS codes be mandated? Should the federal government monitor EAS usage to determine a standard?

PPW re-emphasizes our earlier comments in Paragraph 3 with regard to mandatory state and local participation. PPW suggests that the FCC should make participation in EAS

state and local planning an integral part of a licensee's public service record and its license renewal criteria for broadcasters. EAS activities should also be included in a licensee's public file.

The FCC should also investigate how it can encourage the participation of cable operators in EAS. In the past there were Federal programs that disbursed funds to industry based on their participation in state and local warning activities. These included FEMA's Broadcast Station Protection Program and FEMA's assistance in the 1980s to cable systems to install channel override capability for use by local emergency officials.

DHS already funds preparedness grants to states. These grants should include requirements for developing and maintaining operational public warning systems. Other program examples include DOJ funding of AMBER and the NOAA NWS Storm Ready County program. A comparable Warning Ready County program is high on our list of recommendations.

Broadcasters and cable operators have traditionally made their facilities available to emergency managers by coordinating the creation of pathways so emergency managers have access to their EAS equipment. This is accomplished via EAS entry points and/or relay networks spelled out in SECC and LECC Plans. If the EAS equipment at broadcast and cable facilities receives EAS messages from emergency managers that are preprogrammed with agreed upon event codes, the EAS equipment can automatically preempt programming with the emergency manager's message. This will happen automatically even if the broadcast and cable facilities are unattended. This capability is also available through the EAS Required Monthly Test (RMT). This coordination is all part of the existing EAS planning process that implies good coordination and cooperation. New rules and standards are not needed at this time.

Mandating transmission of additional codes would present serious coordination problems. Without effective state and local plans that properly identify authorized officials, secures communications links, and spells out specific conditions for activation, broadcasters and cable operators would risk giving up program control mandated under FCC rules to sources they have no formal relationship with for an undefined range of warning events.

Effective monitoring of EAS usage will be a key element in determining its success, and in evaluating potential adjustments and improvements. The FCC and DHS should institute after-action service assessments and issue public reports to ascertain the effectiveness of all warning systems including EAS during disasters. NWS presently performs timely and comprehensive service assessment reports to ascertain the effectiveness of their operations during hurricanes, large outbreaks of tornados, etc. Since EAS equipment records all messages received and transmitted, broadcasters and cable operators have an audit trail that could form the basis of the process we recommend. Since there would be some workload and paperwork burden for broadcast and cable entities, careful thought would have to go in to how the assessment process would be funded, administered, and carried out.

Paragraph 25, Page 10

We also seek comment on whether Commission rules that require states with EAS plans to file those plans with the Commission for approval have little impact because Commission rules do not require that states have plans in the first instance. Further, no current guidelines or standards exist for the structure/creation of state or local EAS plans. We seek comment on whether the Commission should adopt rules requiring state and/or local EAS plans. We further seek comment on whether the Commission should establish national guidelines and standards for the structure of such plans? Parties filing comments should consider the following issues: Should there be a specific standard of review, and if so, what should it be? Is the Commission the appropriate agency to undertake this task? Is the SECC and LECC structure the appropriate mechanism for generating such plans? Who should generate such plans? Does the Commission or other federal entity currently have legal authority to require and oversee the development of such plans? Where would enforcement action lie for failure to develop an appropriate plan? Should periodic updating and review of state and local plans be required and, if so, how often? Should adjacent state and local jurisdictions implement standardized EAS plans so that responses to large-scale emergencies that impact more than one state or local area can be better coordinated? Should multi-state regions be defined and plans

developed for them? Should there be reporting requirements for EAS activations to facilitate the development of accurate reports?

It would seem to PPW that Executive Order 12472 requires that the FCC, "Review the policies, plans and procedures of all entities licensed or regulated by the Commission that are developed to provide national security or emergency preparedness communications services, in order to ensure that such policies, plans and procedures are consistent with the public interest, convenience and necessity." Obviously this includes EAS plans. For example, it seems to us that the FCC would want to know if an EAS plan conflicts with Part 11 or any of its regulations. Also, proper review would also answer the question, "Does a given EAS plan strengthen distribution of a national level EAS message or does it inhibit, confuse, or otherwise disrupts it?"

PPW believes that there should be a requirement that local and state EAS plans be developed but only if the planning effort is fully funded. At the same time, EAS planning should not be isolated from other emergency communication plans. An EAS plan should be part of an all-hazards and all-modes public warning and information plan at the federal, state and local levels. One established mechanism for encouraging and standardizing such plans is via the guidance associated with federal funding to state and local programs. That would suggest that such planning might best be driven by an agency with an existing funding relationship with state and local emergency managers. We also reiterate our recommendation that the federal government assist local and state governments in the development of their plans.

When the 1976 Agreement between the FCC, DCPA (now a part of FEMA), NWS and NIAC was signed, model state and local EBS plans were developed as guides for the development of plans across the country. Plans were approved based on how well they adhered to the elements contained in the model plans. Later, EAS plans were approved in a similar manner. However, in reviewing EAS plans, two key operational differences between EBS and EAS had to be considered. EBS plans required one monitoring assignment while EAS requires two, and since the EAN network was disestablished in 1995, each state EAS entry point must be able to reliably receive a PEP station signal.

The government must commit resources to have an effective state and local EAS. We think EAS and new technologies must be included in an integrated warning plan and that the voluntary participation aspect of the EAS state and local level should be maintained.

Several interstate EAS plans have been developed by the SECCs. The SECCs in those areas know how best to solve interstate problems. By maintaining close liaison with the SECCs, the FCC will know the status of interstate plans and how well EAS performed during emergencies. As part of the development of after-action reports of EAS effectiveness during disasters, the FCC should obtain the EAS equipment records for emergency messages received and transmitted by broadcast stations and cable systems. While this can be accomplished because EAS equipment records all messages received and transmitted, a mechanism must be devised to deal with the added workload and paperwork it would generate for broadcast and cable entities, emergency managers, and for the entity charged with review. PPW believes that gathering this information would be consistent with the FCC authority in Section 11.61(b) where EAS test messages must be entered in broadcast station and cable system records for review by FCC inspectors.

Paragraph 26, Page 10

We also seek comment on whether uniform national guidelines are preferred over the disparate manner in which states and localities implement EAS. For example, EAS alerts may be requested by FEMA emergency managers, state and local emergency managers, public safety officials, and other individuals identified in state plans. EAS may also be activated at the state or local level by any AM, FM, or TV station or cable system, at management's discretion, in connection with day-to-day emergency situations posing a threat to life and property. Additionally, broadcasters and cable operators can, but are not required to, monitor the NWS and activate EAS in response to an NWS warning. We seek comment on whether the Commission should adopt rules to require all EAS participants to monitor the NWS where signals are available. Should staff at any broadcast station or cable system continue to be permitted to initiate EAS alerts without

concurrence from local or state emergency managers and, if so, should the Commission or some other federal entity establish standards regarding the issuance of public warning by these entities?

State and local plans frequently differ in many respects. Such differences may include which officials are authorized to originate emergency messages in a locality, their authority and responsibility, which communications assets are available to distribute messages, what stations volunteer to serve as Local Primary sources, and more. We see nothing wrong with these differences. To the contrary, state and local plans must be tailored to the unique needs and assets of the jurisdiction. There is no single model that will work everywhere in the country. At the same time, there is value in having model guidance to insure that all plans at least contain the essential elements to be effective. PPW believes that there are core elements that must exist in all plans that are already clearly outlined in 47 CFR Part 11.

We recommend that there be a standard format used in writing local and state plans. PPW believes all current plans should be looked at regarding style and format elements by a committee composed of SECC Chairs and other interested parties. There may be value in writing plans with a preamble followed by a series of Communications Operations Orders (COOs). The California SECC used this method to make plan changes without requiring approval of the entire plan each time a change or correction is made. The link to their website is: http://eas.oes.ca.gov/Pages/easplan.htm.

PPW believes that local conditions and resources vary sufficiently that it would be unwise to impose too many technically detailed requirements on state and local implementations. There is also the risk that such standardization might stifle beneficial innovation. However, PPW does believe that there is a need for a national "standard of warning practice" to articulate minimal expectations and to provide decision-makers with a basis for evaluating warning system investments and operational warning decisions. PPW believes that any final decision on plan style and format should be made in concert with the assistance of State and local emergency managers, a representative group of SECC and LECC appointees, industry personnel, and interested electronic media outlets.

FEMA can only activate the national level EAS upon Presidential request for a national message. State and local officials, including NWS, can request EAS activation for state and local emergencies. Unless there are agreed upon procedures in advance, preferably through EAS plans, EAS activation at the state and local level is on an ad hoc basis. There are many areas in the country where local officials do not have EAS equipment or communications links to access the EAS equipment at broadcast stations and cable systems and there are also areas where NWR signals cannot be reliably received. Therefore, it is very important that the EAS equipment at broadcast stations and cable systems still have the capability to encode (originate) EAS messages. PPW is aware that EAS message origination policies for broadcasters do exist in state and local EAS plans as an emergency backup in case warning origination equipment within government, or links to EAS entry points, are not available. Under these conditions, the encoding (originating) of EAS warning messages at broadcast stations and cable systems should be conducted under the direction of emergency authorities.

The origination of Required Monthly Test (RMT) messages is a different case. To minimize program interruption, broadcasters and cable operators need to have control over when an RMT is originated. Emergency managers can participate in the RMT process but only after close cooperation with the media and as specified in their EAS plan. This is usually spelled out clearly in SECC and LECC plans so emergency warning originators, broadcast licensees and cable entities can all be on the same page. PPW notes that the expanded relay time for RMT's that was authorized by the Commission two years ago has eased the burden of compliance.

Monitoring NWS (NWR transmitters) has always been voluntary except where NWS fully participates as an EAS Local Primary (LP) source as specified in an EAS state plan. Where NWS does not participate in the EAS structure of a state, broadcasters and cable operators can monitor NWS/NWR voluntarily on any of the extra inputs on their EAS equipment. Requiring monitoring NWR where NWS does not fully participate in EAS disrupts the EAS monitoring structure of the state and local area.

Also, PPW is aware that many plans already mandate or suggest monitoring of NWS/NWR. PPW believes a nationwide effort to link civil warnings into NWS/NWR must be carried out. This will have the effect of eventually bringing most or all NWS/NWR stations into the system in a way that will enhance and reinforce the warning mission. Once this is done, PPW believes plans that do not now involve NWS/NWR would benefit from its inclusion.

PPW believes that most if not all broadcasters and cable operators would much rather relay emergency messages then originate them. They can and do relay selected SAME messages from NWR on a daily basis, Amber alerts and other EAS alerts. However, until local emergency managers have EAS equipment, CAP or other means to originate messages directly to broadcasters, cable operators and NWS, broadcasters and cable operators are being forced to be the primary originators of last resort.

Paragraph 27, Page 10

The primary method of delivery of Presidential EAS messages to state and local areas is over-the-air broadcast signals that follow a hierarchical structure, beginning with FEMA's relay of the message to the 34 PEP stations, which in turn are monitored by the 550 LP1 and state relay stations, which in turn are monitored by over 14,000 broadcast stations and 10,000 cable systems nationwide. However, some emergency managers and SECC members say they lack confidence in the manner in which this system is implemented in their states. They believe stations "down the chain" may miss important state and local messages because, for example, stations that they monitor "up the chain" chose not to air a non-Presidential message or are unattended stations that have pre-programmed their EAS equipment to forward only certain event codes. Some claim that PEP station, or because the PEP station's signal cannot cover the large area it is supposed to cover. Some assert that, in any event, the process takes too long to transmit across an entire state. Accordingly, we seek comment regarding how to improve the distribution of emergency alerts, both national and state/local. Should the originating local agencies transmit alerts directly to as many stations and cable

systems as possible without intervening relay stations? Should other technologies, such as satellite delivery systems, be used as part of a backbone to distribute the alert to entry points? Given the changes in technology within the broadcasting industry, is there still a need to structure EAS with the PEP system? To the extent that any businesses using such technologies are small businesses, how should that status affect our analysis? As we discussed in paragraph 25 above, could inconsistencies in the manner in which states implement EAS be alleviated by the adoption of national guidelines?

There are several state EAS entry points that cannot reliably receive a PEP station signal. Additional PEP stations and a number of the major national broadcast and cable program suppliers must be added to the PEP system to insure total nationwide coverage. Broadcast stations and cable systems affiliated with a major network could then receive EAS national messages on their network receivers at no additional cost. If a separate satellite system were developed to distribute EAS national messages, broadcasters and cable operators would need to install receiving equipment to receive that satellite's signal.

PPW would like to acknowledge the contribution of National Public Radio (NPR) to voluntarily participate in the national level EAS. NPR monitors a PEP station and will relay PEP Presidential messages over their satellite distribution system directly to their affiliates nationwide. The federal government should encourage more networks to volunteer.

EAS state plans must be kept up-to-date to be effective. If the monitoring problems are not correctable with the existing communications assets in a state, then the federal government needs to develop a means to solve the problem. Several states have already funded satellite links to distribute their EAS messages. Unfortunately, this is an expense. The original EAS monitoring structure was designed to be inexpensive using terrestrial based Local Primary and Relay stations that have high power signals and emergency power. These monitoring structures should be maintained as backup systems to the satellite systems.

Also, some EAS plans already detail an enhanced web monitoring structure for EAS. There are many EAS equipment configurations that have four or more inputs. The web idea makes use of the extra inputs to monitor multiple sources for SAME/EAS messages. This makes the EAS monitoring structure much more robust and less prone to message loss.

As stated earlier, the PEP system was designed as a last resort system in the event the EAN network was inoperable. PEP stations were selected using a federal government program that determined whether a station's transmitter site was located in a low risk area. Due to budgetary considerations, the communications link from FEMA to the PEP station transmitter sites was based on the public switched network. This link needs to be upgraded or complimented as soon as possible.

What works in one state may not work in another. State officials, broadcasters, cable operators and local NWS personnel know what works best in their state. Some suggested criteria for evaluating state plans include: date of the plan, connectivity to the PEP system, statewide test results, state network reliability, performance in emergencies, compliance with Part 11, SECC membership, authentication procedures, approvals, etc.

Paragraph 28, Page 11

In the 2002 Report and Order, the Commission amended Part 11 of the Commission's rules by, inter alia, adding new state and local event codes, most of which are for non-weather events such as child abductions (Amber Alerts) and new location codes. The Commission did not mandate the use of these codes. Rather, effective May 16, 2002, broadcast stations and cable systems could upgrade their existing EAS equipment to add the new codes on a voluntary basis until the equipment is replaced. All models of EAS equipment manufactured after August 1, 2003, had to be capable of receiving and transmitting the new codes. Broadcast stations and cable systems that replace their EAS equipment after February 1, 2004, must install equipment that is capable of receiving and transmitting the new event codes. We seek comment regarding whether

circumstances have changed such that the Commission should adopt rules that require broadcasters and cable operators to upgrade their EAS equipment so that it is capable of receiving and transmitting all current event and location codes, including those adopted in the 2002 Report and Order. If such upgrading of EAS equipment should be required, how much time should broadcasters and cable operators have to replace their EAS equipment? How will this impact small cable operators and broadcasters? Should the government fund upgrades for small systems to mitigate the burden?

The FCC should forthwith require the upgrades in its 2002 Report and Order so that all broadcast stations and cable systems have the same EAS operating capabilities nationwide. Otherwise EAS messages with the new event codes will not be "recognized" by the EAS equipment. EAS equipment not upgraded will only display the event as an "unrecognized message".

In the 1994 Report and Order establishing EAS, the FCC mandated several state and local event codes that were not related to the national level EAS. Therefore, the same policy should have applied to the 2002 Report and Order.

When EAS equipment first became available, several groups cooperated to pool their purchasing power to obtain discounts from manufacturers. Also, some State broadcaster organizations have funded EAS enhancements for smaller stations. These avenues might help smaller operators with any cost burden of performing the code upgrades.

Paragraph 29, Page 12

In the 1994 First Report and Order on EAS, the Commission encouraged - but did not require - EAS participation by digital broadcasters. In the Localism NOI, however, we noted that digital technologies have evolved, and can allow broadcasters to provide emergency information in innovative ways. For example, using digital technology, broadcast stations can pinpoint specific households and neighborhoods at risk, with minimal burden on the available spectrum. Accordingly, we seek comment on how digital technology can be used to enhance warnings, and to what extent broadcast stations

currently make use of that technology. We also recently reached the tentative conclusion that EAS rules should apply to all audio streams broadcast by a radio station, such as IBOC. We seek comment on whether we should adopt rules extending EAS obligations to other digital broadcast media, such as DBS, DTV, and satellite DARS services. Commenters should also address whether, when television stations turn off their analog signals as part of the DTV transition, they could leave a market devoid of an EAS participating broadcaster? Is digital cable television service treated in the same regulatory fashion as is "over the air" digital broadcast? If so, should the Commission extend EAS obligations to digital cable television? Does it continue to serve the public interest to exempt services that reach increasingly larger portions of the American public from any requirement to provide public warning? What burdens would extending the obligations place on these services, and do the benefits outweigh the burdens? For example, if DBS satellites were required to carry EAS, what effect would inclement weather have on their ability to send signals. Further, if an EAS alert needed to be sent to an area on the border of a DMA, where a DBS provider only provided local-into-local service in one DMA, satellite customers in the unserved DMA would not receive the signal. How would an EAS signal be fed to a DBS operator? While it could be sent over fiber to their local receive facility (LRF) where they offer local-into-local service, they would not have an LRF where they don't provide local-into-local service. Similarly, how would DBS operators conduct testing, particularly on a national v. local level? Finally, to the extent that software updates were needed in set top boxes, what would be an appropriate implementation time frame? What about legacy boxes that have already been deployed? Satellite DARS serves the public primarily on a nation-wide, rather than regional, basis. Does this distribution structure affect the ability of satellite DARS licensees to discharge EAS obligations effectively? If the national distribution of satellite DARS services limits the ability to discharge state and local EAS obligations, are such limitations technological or regulatory in nature?

PPW believes that wherever the FCC has granted a particular entity the use of limited communication resources (e.g., radio-frequency spectrum or orbital positions), it should expect if not require some fraction of that resource be made available for emergency

public safety activities. Within the broadcast realm at present this might apply at this time just to EAS, but PPW believes the requirement should be framed in such a way that in the future other public warning services and activities could have some assurance of access to spectrum or bandwidth resources for life safety warnings. PPW thinks of this as a call to provide emergency lanes on as many information highways as possible.

PPW further believes that digital radio and television should be integrated into a comprehensive public warning capability, but that the current EAS rules regarding technology and procedures are not sufficient or appropriate to be applied in the digital realm. The technical details of how the message gets there should be left to industry to formulate effective methods and standards that can take full advantage of these technologies. Similarly, this applies to all audio streams including IBOC.

Concerning the shut down of analog TV, PPW believes the public should not be left devoid of an officially recognized public warning capability that is at least equivalent in availability and effectiveness to EAS. Whether such a service is implemented via a technology called "EAS" may be less important than is the actual service provided to the public.

Historically, national programmers have been encouraged to participate in EAS voluntarily. This practice should be continued for now. The federal government must begin to reach out to the DBS, DTV and satellite DARS industries. When the federal government develops the capability to capture all state and local level warnings in a timely manner, then there would be merit to require DBS, DTV and satellite DARS to transmit those warnings to their subscribers who are at risk.
If "over the air" digital broadcast television is required to participate in EAS or as PPW recommends, an integrated warning system, then so should digital cable television service. This would fall in line with the 1992 Cable Act requirement for cable television to participate in the distribution of emergency messages.

Paragraph 31, Page 13

In creating EAS, the Commission sought to design a public alert and warning system that would function seamlessly with many sources of emergency communications. The Commission wished to avoid limiting EAS to a particular transmission system, so it adopted a mandatory standard digital protocol with a flexible architecture that the Commission believed could be used by many kinds of transmission media, encompass new technologies, and be expanded and upgraded as new kinds and generations of transmission systems became available. Despite this intended technical flexibility, EAS, as currently constituted, reaches the very limited audience listening to broadcast radio or watching broadcast or cable television at the time the emergency announcement is made. The most ubiquitous outlet for EAS is radio. However, on average, Americans listen to the radio for only about an hour and a half a day, primarily between 6:00 a.m. and 6:00 p.m. Even fewer people are reached by television. Although more than 98 percent of households in the United States have at least one television, the average set is in use only 31 percent of the day. We seek comment on whether this level of penetration is sufficient to comprise an effective public warning system. If it is not, what level of penetration should we seek and what is the best mechanism for reaching that goal?

Based on the body of social science research and expert opinion regarding effectiveness of public warnings, PPW respectfully suggests that no single warning medium can ever be sufficient alone, no matter how great its penetration. By the same token, even a warning medium of limited reach can be of significant value if it reinforces and corroborates warnings received through other channels. A single, uncoordinated warning can easily be discounted as a false alarm. Effectiveness of warnings depends in large part on the coordination of multiple warning media, which raises public confidence in the reality and accuracy of the warning message.

Government resources are needed to develop model integrated warning systems and plans. The models should include all mediums including the unique techniques developed by industry such as CAP, generic voice dialing systems, sirens, special and private radio systems, etc. The models should then be used to develop emergency plans throughout the country. Follow up training and exercises are needed. Models would still be needed if a

new system replaced EAS. The country has been without a public warning planning and training program for to long.

EAS was designed to alert the public to an emergency through transmission of a four-part message. These include a digital header part containing the critical elements about the message, an eight second alert tone, an audio message limited to two minutes and a digital end of message code to reset equipment. EAS alerts are a heads up to the public. They must be followed with emergency information to provide additional details and keep the public up to date.

Paragraph 32, Page 13

Because EAS relies almost exclusively on delivery through analog radio and television broadcast stations and cable systems, is EAS, in the current communications universe, outdated? Instead, should there be a concerted government/industry effort to combine EAS with alternative public alert and warning systems (APAWS) to form a comprehensive national public warning system capable of reaching virtually everyone all the time? The possibilities are numerous and varied. Several companies offer landline-based interactive notification systems that would convey national, regional, and local emergency messages via the public switched telephone network to wireline telephone subscribers located in the specific geographic areas affected by emergencies. Other companies offer systems that use Internet and/or cellular capabilities, including the cell broadcast feature of digital cellular networks, to deliver alerts to mobile handsets of wireless subscribers or to televisions, cable boxes, clock radios, cars, computers, stand alone units or other devices after incorporating patented receiver devices. Some companies offer satellite based warning and messaging systems which use very small aperture terminal networking to provide direct satellite communications. There are also emergency message and warning systems offered on a subscription basis that use computerized calling systems, fax, email, and digital messaging to reach many different types of devices. Some of these systems are used currently by certain states, along with EAS as part of their public alert and warning system. How could a combined warning

system that makes use of some or all of the features described here be implemented? Should the Commission require any APAWS to participate in the existing EAS and, if so, which ones and how should they participate? For example, should all APAWS be required to be compatible with the existing EAS protocol? In considering these issues, should our analysis distinguish between wireless systems used primarily for one-versus two-way communication, or point-to-point or multi-point versus broadcast? Commenters should discuss any legal or practical barriers to its implementation and effectiveness, noting whether legislation would be required from Congress or by Executive Order.

Integrating EAS into an Alternate Public Alert and Warning System (APAWS) might be the right approach, both from a public warning effectiveness point of view, and in terms of allowing market forces to align with government in driving toward continual improvement to the nation's warning capabilities.

We note that cell phone broadcast is a specific concept that would take several years for the appropriate new cell phones to be adopted into the general population. It is a valid concept but it is not yet a proven commodity. It should be studied immediately and if proven workable, implemented as soon as possible. However, there are companies offering systems that use Internet and/or cellular capabilities, including the delivery of emergency text messages. Although the voice channel of cellular systems is prone to overload, the data channel that carries text is extremely reliable and even performed well on September 11, 2001.

Before embarking on legislation or Executive Order changes, the responsible government agencies should adopt an overall strategy for an integrated national public warning capability. This would ensure that any changes relevant to EAS are compatible and coordinated with other warning and emergency information programs.

EAS should certainly be one element of an integrated national warning capability, at least for the foreseeable future. Other technologies should not be misunderstood as "alternatives" in the sense that they could replace EAS. These other technologies should be viewed as additional facets of an integrated public warning architecture.

PPW offers as one example the Advanced EAS Relay Network (AERN) using CAP as described in paragraph 4 above. AERN illustrates one approach to integrating EAS with other existing and future systems in a forward-looking national warning architecture. The inherent "backward compatibility" of the CAP data standard makes it possible to enhance EAS and other systems without disrupting them.

The federal government needs to answer several questions to be able to develop a plan of action to build a nationwide operational warning system. Have we identified the existing warning and communications assets available to states and localities, especially the federal assets? Are they being fully utilized as part of a warning system? What assets are needed in the areas where warning systems are dysfunctional? How are the inter-operational problems corrected?

The legacy systems of EAS and NWR definitely have a place in an integrated warning structure.

Paragraph 33, Page 14

As an alternative, would the appropriate approach be to integrate EAS into a PAW "system of systems" by adopting and using a single, integrated interface that would link the emergency manager and all emergency notification and delivery systems, regardless of the technology on which a particular system is based? In this regard, we note that the Organization for the Advancement of Structured Information Standards (OASIS), a not-for-profit, international consortium that addresses the development, convergence and adoption of e-business standards, has adopted the Common Alerting Protocol (CAP) as an OASIS standard. CAP is a standardized, non-proprietary, data interchange format that simultaneously disseminates consistent all-hazard emergency alerts or public warning messages over different kinds of communications networks and systems, including those designed for multilingual and special needs populations. The CAP format is compatible with emerging and existing formats, such as web service applications, NWS' SAME, and the EAS protocol and offers a number of enhanced capabilities. Proponents assert that CAP has the potential to increase warning effectiveness and

reduce costs and operational complexity by eliminating the need for multiple custom software interfaces to the many APAWS involved in all hazard warning. Several government agencies and private companies have also implemented CAP, including DHS, NWS, and Comlabs, Inc. We seek comment on whether the CAP could act as an effective interface through which an emergency manager could access multiple emergency notification services, including EAS.

PPW has supported the development of CAP as an approach to the goal of coordinated dissemination of well-crafted public warnings. CAP is now a confirmed standard that is being used in the real world. CAP was designed to provide both a procedural template for the composition of complete and effective warning messages, and a technical framework for integration of existing and future warning systems. PPW believes that the burden on warning originators during emergencies would be greatly reduced by the use of a single warning origination tool, with output in the non-proprietary standard CAP format that could then be automatically translated into the 'native' formats of EAS, NWR and any other warning system.

Paragraph 34, Page 14

MSRC's Future Technologies/Digital Solutions Task Force recommends that the government should coordinate development of a Media Common Alert Protocol (MCAP) which should: (1) be designed to deliver emergency messages via digital networks; (2) flow over all methods of digital transport; (3) be received by all digital receivers; and (4) be optimized for point-to-multi-point networks and devices only. MSRC also suggests that key attributes of the MCAP should be addressability, scalability, interoperability and prioritizing. MSRC recommends that industry organizations and companies should develop standards and specifications for carriage of MCAP on various media. We seek comment on MSRC's recommendation. We are mindful that the availability of particular delivery methods may differ in rural and insular areas from more urban areas. We seek comment on any particular needs or considerations we should afford rural areas.

PPW supports the MSRC's recommendation and believes that the OASIS CAP standard, designed based on social science research and field experience in the composition and dissemination of effective warning messages, offers a solid foundation for it. PPW notes that CAP was designed for use over both broadcast and point-to-point links and has been deployed in both modes, and that few practical differences have been identified between the two contexts. However, to the extent there may be a need for a specialized broadcast "profile" of the more general standard, PPW believes it should share most of the existing characteristics of CAP.

Rural areas usually have fewer warning assets than urban areas. Many rural counties rely on nearby urban areas for warning messages. It is imperative that warning plans take these adjacent areas into consideration in the planning and testing phases. During large- scale emergency evacuations, rural areas may need as much or more advance notice to prepare for the needs of evacuees.

Paragraph 35, Page 15

Finally, to what extent does an effective public warning system depend on the consumer electronics equipment that receives the warning? MSRC has identified as two primary functionalities of a future warning system the ability of a device (such as a radio or television set) to automatically turn on and tune in to the channel carrying the warning, and the capability of such a device to receive a geographically addressed message (through FIPS or GPS). We note that the technology exists to have consumer electronic devices turn on automatically in the event of an emergency. We note that, as described in paragraph 14 above, NOAA Weather Radios currently supply both these functions. Would mandating the adoption of such technology to other consumer electronic devices enhance the effectiveness of EAS and other PAW systems?

PPW supports the broad implementation of such technology in consumer devices, with the caveat that broad market uptake can have the downside effect of creating inertia that impedes technical advances. This is another reason PPW recommends that the national

public warning architecture be viewed as a "system of systems" rather than a monolithic technical framework that could become more inflexible the more widely it was deployed.

PPW believes in creating solid standards and practices for warnings so manufacturers can feel confident that they can build personal warning devices that can take better or full advantage of all the capabilities of the current SAME/EAS protocol. The manufacturer of the only warning appliance TV receiver on the market to date stated to PPW that they rely on an embedded NWR receiver because NWS uses NWR as one of their warning distribution resources.

PPW believes the value of imbedding NWR receivers, as SAME message sources will increase once more local emergency management warning centers are linked in to NWR. The State of Washington has been experimenting in cooperation with NWS on this with some success. PPW believes the fastest path to nationwide implementation will be through a national EAS needs assessment showing what links are missing or broken, followed by funding, possibly through DHS, to meet those identified needs.

We note that there are a few radio models available that can turn on automatically upon receiving an EAS event and/or location code. However, they have a very small market share in only a few areas.

As another example, presently there are hundreds of unused FIPS numbers (EAS location codes) that can be used for the purpose of alerting not only unique geographic areas but also groups of individuals and organizations. Only a few states have taken advantage of this capability. State and local authorities need to be made aware of this capability. Also, there are a number of other ideas to increase warning message distribution including: a Warning Ready County program administered by the government, e-chip TV requirement similar to the v-chip requirement, an insurance credit program for warning devices similar to the one for smoke detectors, etc. Closed captioning of video programming (See 47 CFR Part 79) that is a feature present in most television receiving sets could also be used for display of extensive emergency information for the hearing public as well as the hearing impaired.

There is a wide and growing array of technologies for alerting and informing individuals with various disabilities. The range of special-audience requirements is so broad that it seems futile to try to address them all with any one technology. Thus PPW believes that the creation of a "warning internet" to deliver consistent messages into various specialized warning systems is the only viable approach to this challenge.

Paragraph 40, Page 16

Emergency Warning for Non-English Speakers. We should also consider the needs of people with primary languages other than English when considering the best method of contacting the public during an emergency. In order to ensure that foreign language audiences are alerted, the Commission's EAS rules provide that EAS announcements may be made in the same language as the primary language of the station. We seek comment of the efficacy of these rules. For example, if a radio station transmitting in English is located in a predominantly Spanish-speaking community, should the station transmit EAS alerts in both English and Spanish? Additionally, products can be developed to convert the EAS digital signal to provide aural and visual messages in any language. We seek comment on whether current methodologies for providing alert and warning to non-English speaking persons are adequate. If not, what additional provisions are necessary, and what would be the costs associated with implementing such provisions?

PPW believes that there are a number of technologies for multi-lingual alerting and information available, but that most of them operate outside the current framework of EAS. While some of these systems might benefit from the enhanced bandwidth offered by digital broadcasting technologies, PPW feels it is unrealistic to expect that EAS alone could ever adequately serve the needs of all language groups. This is another area where EAS could benefit from an operational partnership with other technologies, implemented through a standards-based "warning internet" for coordination.

The digital header portion of the EAS protocol contains only the critical elements of a warning message. Until recently, no one had developed a method to digitally package the

aural portion. Now a company has developed a method so that the aural portion can be digitally packaged and transmitted as part of the EAS protocol. This improvement is an example of how legacy systems can be improved to provide more information to the public. There are also potential solutions made possible using the CAP standard.

Each community has unique needs in this area. For example, we note that Arlington County, Virginia has over 60 languages. It is the responsibility of the local emergency managers to develop systems that will reach the public in all appropriate languages. In some instances EAS may be the chosen dissemination method. In other instances other technologies may be more appropriate.

Paragraph 41, Page 17

Security. We also seek comment as to the security issues relevant to EAS. Security and encryption were not the primary design criteria when EAS was developed and initially implemented. Now, however, emergency managers are becoming more aware of potential vulnerabilities within the system. For example, the complete EAS protocol is a matter of public record and potentially subject to malicious activations or interference. Further, EAS distribution methods have potential for security concerns. For example, Internet Protocol-based systems and control links could be subjected to "denial of service" attacks aimed at preventing them from functioning. Additionally, when a station is operating unattended, no one is available on-site to intervene should an unauthorized seizure occur. There is also concern about physical security and unauthorized use of the system at state and local EAS activation sites. Although Commission-certified EAS encoders have the capability for password protection, it is up to each station and cable system to implement sufficient security and there is no way of knowing which stations use password security. Finally, EAS signal could be subject to jamming. Such vulnerabilities could be exploited during times of heightened public anxiety and uncertainty. We seek comment on how to improve the security of EAS distribution methods, information, and equipment or how to ensure the security of any public warning system. Should the Commission require password protection of all EAS encoders? Who should be

responsible for system security and what security standards, if any, should be implemented? How can the authenticity of EAS messages be verified and/or how can broadcasters be protected from liability issues if they inadvertently rebroadcast a false or incorrect EAS message? Would adoption of any of MSRC's Best Practices alleviate security concerns?

PPW addressed the EAS security issue at length in its EAS report. We doubt that any public "over the air" protocol can be made completely fool proof and totally secure. But certainly security improvements to the existing structure can only help. Section 11.32(a)(1) specifies that, "Encoder programming access shall be protected by a lock or other security measures." Enforcement of this specification should be conducted. We are aware of no unauthorized access to the EAS since its establishment. However, broadcasters and cable operators should insure that EAS messages they have selected for reception and transmission over their facilities originate from authorized sources. These are specified in EAS plans. The fact that unattended operation is permitted only strengthens this point. We believe that jamming radio and television signals is rare, especially the high power signals usually transmitted by EAS Local Primary sources. Also, emergency managers should insure that their communications links to broadcasters and cable operators are as secure as possible.

The SAME/EAS protocol is transmitted in the clear. Unless costly changes are made to SAME/EAS devices, there is some risk that they could be "spoofed." The FCC has allowed software-only EAS devices to come on the market. PPW sees some enhanced risk of "spoofing" if the software falls into the wrong hands. Sixty years of warning research has shown that warning recipients usually require corroborative information before taking drastic protective actions, this would almost certainly mitigate the effectiveness of any EAS spoofing attempt.

Loss of one EAS source is not critical as long as broadcasters and cable operators use the multiple monitoring capabilities of their EAS equipment. EAS plans employing the web monitoring structure greatly decrease the chance of failure to receive EAS messages.

PPW notes that digitally encoded messages can be digitally signed and encrypted to a high level of confidence. Digital signatures can be used not only to authenticate a message, but also to ensure that it has not been modified in transit. Such signed and encrypted messages have the advantage that they can transit un-trusted communications links (e.g., radio links, telephone lines, satellite circuits) without fear of compromise. Thus, adoption of a digital message format such as CAP that can transmit text, audio and imagery would also permit the use of these mature standards for data encryption and authentication.

MSRC's Best Practices should be incorporated into the development of EAS plans.

Paragraph 42, Page 17

Location of EAS Equipment. In the 2002 Report and Order, the Commission modified its rules to exempt satellite/repeater stations which rebroadcast 100% of their hub station from the requirement to install EAS equipment, provided the hub station complies with existing National level EAS equipment installation, activation and testing regulations. We acknowledge that this practice removes EAS equipment from the satellite/repeater stations and thereby precludes their participation in the State or local EAS activations via the EAS network. We seek comment on the impact this practice has or will have on any proposed changes to EAS or public warning systems. We also seek comment on whether the Commission should extend this practice to any other EAS providers. In this regard, such comment should address whether any centralized placement of EAS equipment, such as at the head-end of a cable system or satellite uplink, would have a positive or negative impact on the efficacy of EAS as a national, state, or local emergency notification system. Where is the best place to locate EAS equipment so it can be the most useful and maintainable?

The automated EAS was created so that unattended stations and repeater stations far removed from their master station would be able to receive and selectively transmit EAS messages for their service area. This is especially important if the master station is located in another EAS area with different EAS monitoring assignments. Satellite stations

operating as part of a nationwide satellite network also need to eventually have their own EAS equipment. Providing extended timelines for compliance with EAS equipment requirements is one way to provide some financial relief to satellite/repeater stations. Very large cable systems serving multiple counties sometimes have nodes that provide county level service to subscribers in a particular county. These nodes could also be input locations for emergency messages. PPW suggests that DHS funds be made available to support this need, once a comprehensive EAS needs assessment is carried out.

We note that local franchise agreements with cable companies can include arrangements for providing emergency messages to cable subscribers. One method to accomplish this is to use the EAS equipment at cable facilities.

Paragraph 43, Page 17

Testing. FEMA conducts weekly closed circuit tests of the PEP system by sending signals to EAS equipment at each PEP station site. However, no on-air tests of the PEP system ever have been conducted. All broadcasters and cable operators are required to conduct EAS weekly and monthly tests to ensure their EAS equipment is in operating condition. Should comprehensive periodic testing of the entire national EAS system from the PEP stations on down to state and local broadcast stations and cable systems be required? If so, how often should such testing occur? Should a special national level test code be adopted for this purpose, and should a post-test report be required? Should these national tests be in addition to the current testing requirement? Would having too many tests become a public nuisance leading to ignoring EAS alerts by the public? Additionally, we seek comment on whether the required monthly tests adequately evaluate the state-wide distribution of EAS alerts and, if not, what method of testing should be required.

Under EBS, nationwide tests of the national level EBS were conducted every three months. The White House Communications Agency (WHCA), FEMA, FCC, and the national radio broadcast networks and wire services participated. The FCC developed test reports based on the return of questionnaires from broadcast stations. With the demise of

the EAN network in 1995, these types of national tests were discontinued. End-to-end testing of the national level EAS should begin immediately. Given the capabilities of the EAS equipment, this can be easily accomplished in an unobtrusive manner. Section 11.31(d) already contains the codes that can be used to proceed with national tests.

PPW is aware that the Primary Entry Point Advisory Committee (PEPAC) has been looking at the issue of national testing since well before September 11. One plan suggests a series of tests to confirm proper operation by time zone or region. Basic PEP tests right now are totally closed circuit in nature. The first step towards open circuit testing was actually implanted in the form of a simple programming adjustment to the EAS decoder/encoder at each PEP station. It enabled them for local origination of an EAS weekly test. All PEP stations performed that change and conducted local tests before September 11, 2001. This confirmed that the encoders are functioning properly. The final step of that draft plan, yet to be taken, would be a coordinated test using the existing EAS Required Monthly Test (RMT) model. The voice message would be short and simple, and possibly voiced by the President.

Some states already conduct meaningful statewide RMTs. These tests help states identify EAS monitoring problems. NWS personnel and authorized officials can participate in RMTs by originating the test messages.

Paragraph 44, Page 18

Training. Some broadcasters and cable operators state that the EAS system and equipment are difficult to learn and use during actual emergencies and that the infrequent use of the equipment results in staff members being unable to remember how to use it when necessary. Additionally, lack of EAS training for emergency management personnel is a concern. We seek comment on whether additional training resources should be provided to emergency managers and, if so, what these materials should include. Should there be periodic mandatory EAS training of broadcast station and cable system personnel? Should emergency managers receive mandatory education and

training regarding how and when to utilize warning systems? Who should provide such education and training? Is there a need to educate the public about the EAS and public warning? If yes, who should be responsible for such education? Who should incur the costs of training materials and employee time?

The initial set up of any manual or automated system requires extensive training and planning. Especially when close cooperation is required between the originators and distributors of messages. When it comes to EAS, this is especially true since close cooperation is required between the people who originate EAS messages and the people who are responsible for operating the broadcast and cable entry points for EAS messages. When EAS is automated at broadcast and cable entities, the training burden is significantly reduced. EAS equipment is designed to operate best when it is set to automatic or semi-automatic mode. This can relieve operators from having to decide what to transmit and what not to transmit. Some EAS manufacturers have software based programming for their EAS equipment. This has made it very easy for personnel to originate tests.

Almost all broadcast stations and cable systems now have computer-operated equipment that can interface with EAS equipment. NWS faced the same start up problems with WRSAME. Their operators are now very proficient at originating SAME/EAS based messages.

Emergency managers and NWS personnel are legally responsible for originating emergency information and warnings. SAME/EAS warning messages are a critical part of that function. Broadcast and cable functions as the means to relay warnings from those with the legal duty to issue them. Broadcasters and cable operators should not place themselves, or allow themselves to be placed in a position where they have to originate EAS messages. The only exception should be when there is no other method available and warnings are issued under the supervision of emergency management as outlined in an emergency procedure in EAS Plans.

DHS provides several training forums for emergency managers. They have great training facilities. EAS training should definitely be a part of their training schedule. Cross training opportunities should be available so broadcast and cable personnel have a better appreciation of the emergency management function, and emergency managers can better understand how broadcast and cable can help them do their jobs better.

A massive EAS public education program is definitely called for. Some of the public thinks EBS is still operating. Public education about EAS and emergency information is sorely needed. NWS does a good job informing the public about their services. The public remains largely uninformed about EAS in most parts of the country. The government needs to do public education for EAS and warnings in general. The very elements of EAS testing and messaging that were designed to make it less obtrusive to on-air programming have worked to make EAS less visible to the public than the EBS that it replaced. Many people, some in high emergency management positions, still refer to EAS as EBS. Such a public education program must be accompanied by training for those who issue warnings, and for broadcasters and cable operators who must relay them to the public Emergency managers and NWS personnel can, through coordination with local broadcasters and cable operators, participate in EAS RMTs. They can provide a voice message to be transmitted as the aural message of an RMT.

Paragraph 45, Page 18

Small Operators. Many of the topics discussed above would likely require participating services to incur additional costs. While large companies may have the resources to absorb equipment upgrades and staff, small business entities may not. Should the level of participation required be dependent on the size of the participating entity? How would predicating participation based on company size affect the usefulness of EAS? Should assistance be provided to small businesses? Should we consider government or other funding assistance to small entities? We note that many small cable operators have received temporary waivers of certain EAS rules due to financial hardship. What has been the effect of such waivers?

PPW is not aware of any studies that show any adverse effect from waivers. The absence of studies suggests that the FCC should contact either the LECC and SECC Chair most closely associated with the party requesting a waiver. This would give the FCC more support for granting a waiver that could potentially have adverse impact on local warnings. 47 CFR Part 11 already contains several breaks for small operators. In the past the FCC has given waivers to small operators for various reasons. These practices should continue especially if the reasons are financial, and there is no adverse impact on the warning picture for those in the coverage area of the requestor of the waiver.

How can local entities claiming financial hardship continue to be a part of EAS? Small operators might form alliances to purchase EAS equipment in large numbers to reduce cost. Some DHS funds might be made available to support, repair and enhance EAS in cases of demonstrated financial hardship, or if local needs require more support if a waiver that is or has been granted creates gaps in warning coverage.

Paragraph 46, Page 18

Enforcement. The Commission has been aggressively enforcing the Commission's EAS rules. In 2003, for example, the Enforcement Bureau took approximately 80 EAS enforcement actions. Nonetheless, some broadcasters have failed to install or properly maintain EAS equipment. The base forfeiture amount set in the Forfeiture Policy Statement and section 1.80 of the rules for an EAS violation is $8,000. We seek comment on whether we should increase the base amount or otherwise impose higher forfeitures in this area, and on whether there are additional ways to better ensure compliance. We also seek comment on whether we should seek legislation from Congress to increase the maximum forfeitures in this area from the current $32,500 for a single violation or day of a continuing violation and maximum of $325,000 for a continuing violation. PPW has concerns about the mixed message sent by penalties for non-compliance for what is actually a voluntary program when it comes to relaying local warnings and alerts. PPW does recognize the vital importance of keeping the installed base of EAS equipment

operational. If an inspection finds EAS equipment missing or has never been installed, PPW agrees with those that would support the present fine structure. PPW would also like to suggest that the Commission consider a fine reduction incentive for timely correction of EAS violations. Repeat offenses do need to be dealt with strictly, requiring either the present level of fines, or a multiplier.

PPW respectfully suggests that the Commission consider adding some carrots to foster more support to broadcast and cable licensees for relaying more EAS messages. These include: (1) EAS participant licensees should get special credit during the license renewal process for active participation in the local and state EAS, (2) FCC should work with other agencies on an EAS awards program much like the Mark Trail awards program within NOAA/NWS and, (3) LECC and SECC committee members who work for broadcasters or cable operators should receive special regional training to help them do their no-pay jobs better. This training should be paid for out of homeland security funds.

Paragraph 47, Page 18

Miscellaneous Issues. We request comments on any other matters or issues, in addition to those discussed above, that may be pertinent to establishing the most effective and efficient public warning system in the United States and its territories.

The nation urgently needs an integrated warning system that is kept up to date and tested regularly. This warning system must be thought of as a continuum. It begins with reliable, timely and clear information for authorized originators of warnings, and more faster and better sensors that can recognize a wider range of dangerous conditions. It depends on rapid and accurate assessment and decisions on the need to issue a public warning (or not) and the content of the warning message based on confirmed sensed data. It relies on well-defined and protected emergency lanes that must be built into the ever-growing number of information highways to the media and to the public.

We must never forget that public warnings, EAS included, are not isolated events, but are only one component of the overarching practice of emergency management. Their role within this discipline is expanding as emergency managers are starting to look at

information as a resource to be managed in its own right, much like sand bags and fire trucks. Dating back to the old EBS test message, warnings promise "news and other information" that people at risk look for once they have been sensitized to a threat. Expanding and enhancing EAS capabilities will make this process easier, and more able to fit seamlessly into all information paths to the public that come into play once warnings are issued.

Paragraph 48, Page 19

We initiate this proceeding to establish a record on how the Commission can best facilitate the implementation of EAS as part of an effective public alert and warning system. After review of the record we will determine what rules or other next steps are appropriate. We may adopt new rules or revise certain of our current EAS rules, or we may combine an order adopting rules with a report summarizing the record and our policy perspectives regarding matters raised in the record in advance of further work with DHS and others in this area. At the same time, we might make legislative recommendations to Congress. In this regard, we invite comments on whether the Commission should make recommendations to Congress regarding EAS, or whether any of the Commission's EAS rules not otherwise addressed in this NPRM should be changed, and if so, why. Finally, although we have identified above particular subjects that we believe of interest to the public regarding EAS and public alert and warning in general, we welcome comment on any other ideas relevant to the issues addressed in this NPRM.

We end our comments as we began them – by commending the Commission for undertaking this proceeding. The Emergency Alert System is an important part of the nation's ability to warn and inform citizens during times of emergency. Unfortunately, we know that today's system does not work – emergency warnings fail to warn many citizens at risk while warning many not at risk. We can do much better. A more effective public warning capability will save lives, reduce property losses and speed economic recovery.

The Emergency Alert System can play a more effective role in warning citizens during times of emergency. However, it needs to be strengthened. The first step in achieving this goal is more aggressive federal leadership coupled with a collaborative process that involves all the stakeholders. The second step is to implement the many recommendations made by PPW in these comments.

A more effective EAS in and of by itself, however, is not the entire solution to America's public warning capability. We need a comprehensive strategy that integrates EAS, NWS, other existing systems and new technologies into a uniform and comprehensive national architecture that supports the ability of local officials to warn their citizens in a timely and effective manner. The stakeholders involved in PPW have developed such a strategy and a plan for its implementation. We urge the Commissioners to review this strategy and plan carefully.

In considering the development of a national public warning capability, the most important thing to remember is that public warning is not a technology problem. We already have the technologies necessary to warn and inform citizens at risk in a timely and effective manger. There is no need to develop new technologies. The need is for standards, policies, procedures and education. For a better understanding of the key elements of an effective public warning capability, we urge the Commission to read Introduction to Public Alert & Warning" , (PPW Report 2004-2)).

The Partnership for Public Warning is available to assist the Commission and other federal agencies address these issues. Please do not hesitate to contact us.

C. Emergency Alert System: An Assessment

In February 2004 The Partnership for Public Warning produced an outstanding document which provided an in depth profile of the Emergency Alert System. This informative assessment, developed with input from experts in industry, government and academia, set forth a vision and strategic plan to create a more effective national public warning system.

The Emergency Alert System (EAS): An Assessment

Partnership for Public Warning

FEBRUARY 2004

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1. About this EAS Assessment

The Emergency Alert System (EAS) is one of two national systems that exist in the United States to provide alert and warning information directly to the public. The other is the National Oceanic and Atmospheric Administration's Weather Radio system operated by the National Weather Service.

The purpose of this document is to provide a definitive description and evaluation of the EAS past and present as a basis for recommending ways to make immediate improvements. As this report indicates, the current Emergency Alert System has a number of significant policy, management and operational challenges.

America has an obligation and the technologies to build a national alert system that can warn people regardless of where they are, what time of day or what language they speak.

In May 2003 the PPW issued "A National Strategy for Integrated Public Warning Policy and Capability." This document, developed with input from experts in industry, government and academia, sets forth a vision and strategic plan to create a more effective national public warning capability.

2. Introduction

The Emergency Alert System (EAS) is our primary national warning system. It serves two functions:

- It provides a method for the President to address the nation during dire national crises.
- When not in use by the President, state and local officials can use it to issue short warning messages of imminent or ongoing hazards through broadcast stations and cable systems in specific regions.

All radio and television stations and cable television systems must broadcast Presidential alerts immediately or leave the air. They may choose to broadcast state and local alerts and can postpone broadcasting a warning or alert that is still in force until there is a programming pause. National alerts are issued through the Primary Entry Point (PEP) system via dialup telephone lines to 34 continental U.S. and territorial radio stations, which cover in theory approximately 90% of the U.S.

All non-PEP 14,000+ broadcast stations and 10,000+ cable systems are required to follow their EAS state plans. Each state's plans specify the monitoring assignments for all broadcast stations and cable systems within that state. At least one PEP station should be monitored by a state's EAS network so that national level EAS messages can be distributed in that state.

All broadcast stations and cable systems have EAS designations that describe their function within EAS. PEP stations have a National Primary (NP) EAS designation since they are the entry point for national level EAS messages. State level entry points have designations of

State Primary (SP) and State Relay (SR). Local entry points have designations of Local Primary (LP). There is one national network that has voluntarily agreed to distribute national level messages to its affiliates. National Public Radio (NPR) directly monitors a PEP/NP station and will relay a national level EAS message as soon as it is received. To reduce the likelihood of a single point of failure preventing an EAS message from getting through, FCC regulations require all broadcast stations and cable systems to monitor at least two EAS sources that are specified in their EAS state plan.

The National Weather Service (NWS) originates about 80% of all EAS alerts. Some broadcast stations and cable systems voluntarily monitor the NWS's NOAA Weather Radio (NWR). NWR supplies local EAS encoded alerts to broadcast and cable entry points as set out in each approved EAS state and local plan. In some localities, emergency managers can originate EAS alerts through NWS, through a broadcaster or cable operator, or through their own equipment if they have made prior arrangements that are documented in EAS plans. Proper operation of the EAS depends on those state and local plans that specify how stations are linked together in monitoring webs; how SP, SR and LP EAS sources get EAS warnings; how EAS testing is accomplished; and which EAS messages may be relayed.

3. EAS History Highlights

The EAS and its predecessors have been in various forms a concern of every Presidential administration since the 1950s.

- In 1951, President Harry Truman established CONELRAD and issued a White House Statement of Requirements (WHSR) for CONELRAD. Every succeeding administration has issued a WHSR with the latest by President Clinton in 1995.

- In 1958, the FCC established the National Industry Advisory Committee (NIAC) consisting of volunteer industry personnel who provided expert advice to the FCC concerning emergency plans, rules, policies, etc. The NIAC has continuously

existed under various names to the present day. The most recent committee is the Media Security and Reliability Council.

- In 1963, CONELRAD became the Emergency Broadcast System (EBS) and the Broadcast Station Protection Program (BSPP) was established to support critical components of EBS. The Federal government through the BSPP supplied emergency generators and equipment to selected broadcast stations.

- In 1971, the North American Air Defense Command (NORAD) erroneously transmitted a national level EBS warning message. As a result, NORAD and its "Attack Warning" function were removed from the EBS. Since then, only the President can activate the national level EBS.

- In 1976, the FCC replaced the old CONELRAD inter-station alerting technique with a two-tone EBS Attention Signal. Also, the Defense Civil Preparedness Agency (DCPA), a part of DOD; the FCC; the NWS, and the NIAC signed an Agreement to promote a coordinated effort to develop detailed state and local plans to permit use of the EBS for warning the public about local disasters. The Agreement was updated as an MOU in 1981 but the MOU has not been updated to reflect the EAS. By the mid 1980's, every state and U.S. territory and over 400 localities had EBS plans.

- In 1983, the FCC and FEMA began studies to backup the primary national level EBS distribution system with a new backup distribution system. FEMA began construction of this backup system in 1987. It was named the PEP. In 1995, FEMA stopped funding the primary national level system and the PEP became the one and only national level distribution system.

• In the early 1990's, the FCC began investigating new alerting techniques that would work at unattended broadcast stations and cable headends. The 1992 Cable Act required that cable become a part of EBS.

• In 1994, the FCC established EAS to replace EBS. EAS used a digital architecture to provide for automatic operation. It also uses a digital protocol that is identical to the NWS digital protocol transmitted on NOAA Weather Radio.

• In 1997, all broadcast stations were required to have the new EAS equipment. This requirement was expanded to large cable systems in 1998 and all cable systems in 2001. Cable systems are required to override all program channels with a national level EAS message.

Presently, most states and over 100 localities have an EAS plan. But over 400 localities do not have a plan. Also, almost all states have an AMBER plan that incorporates EAS.

4. How the EAS Works

As provided for in Title 47, Chapter 1, Code of Federal Regulations, Telecommunications, Federal Communications Commission, Emergency Alert System, Part 11

a. "The EAS provides the President with the capability to provide immediate communications and information to the general public at the National, State and Local Area levels during periods of national emergency."
b. "The EAS may be used to provide the heads of State and local government, or their designated representatives, with a means of emergency communication with the public in their State or Local Area."

If the President ever decides to issue a national alert (none has ever done so), a White House Communications Agency (WHCA) officer contacts the FEMA Operations Center

(FOC) or FEMA Alternate Operations Center (FAOC) immediately through special communications channels from wherever the President is located. The FOC or FAOC then activates the Primary Entry Point (PEP) system. Calls are placed simultaneously to the 34 PEP radio stations across the country and U.S. territories. After appropriate "handshaking," the transmitters at the PEP stations come under government control. Programming on the PEP stations is pre-empted and the President has an open channel to communicate his message. A Presidential message containing the EAS national level code, alert tones and an audio message follows. The audio message can be for an unlimited time and is terminated upon transmission of the EAS End Of Message (EOM) signal. EAS entry points in each state (broadcast stations, Emergency Operating Centers, State Emergency Management Agencies, etc.) monitoring a PEP station will have their EAS equipment captured and transmission of the Presidential message will begin. The message will then be distributed through each state EAS system provided that the state has a working EAS plan. State EAS entry locations need to monitor at least one PEP station. As specified in FCC Part 11, those stations that have elected to terminate programming during a Presidential message will go off the air. They will return to the air upon receipt of a second EAS message containing another EAS national level code. Any broadcast station or cable system in compliance with the FCC's rules for unattended operation will be a de-facto participant in the EAS since properly installed, maintained and tested EAS equipment is a Part 11 unattended operation requirement. The above procedures are specified in the FCC EAS Handbooks for AM, FM and TV broadcast stations and cable systems. State and local alerts may be inserted into EAS several ways:

a. NWS transmits watches and warnings through the EAS via a complete EAS message on NWR. Many broadcast stations and cable systems purchased EAS equipment with receivers that can monitor NWR.
b. According to Part 11, broadcasters and cable operators are permitted to originate an EAS alert. Since civil and weather warnings should come from entities with the legal responsibility for public warnings, many EAS experts believe that this activity should be viewed as an emergency backup capability.

c. A growing number of state and local emergency managers and law enforcement agencies have EAS equipment and enter EAS tests and warnings directly through broadcast stations and cable systems identified in EAS plans. In a few areas officials can originate EAS events through their local NWR station. Implementation procedures should be included in a state and local area EAS plan.
d. State and local emergency managers may call the local NWS office or a broadcaster to request that an alert be issued according to procedures and authentication methods that should be in published local and state EAS plans.

When EAS is being implemented in a given region, broadcasters, cable operators, emergency managers and others concerned form State and Local Emergency Communication Committees (SECCs and/or LECCs). They design a monitoring plan that determines what entities will serve as the EAS sources and originators of messages (EOCs, 911 centers, NWR, etc.). All other broadcast stations and cable systems must monitor the originating sources. They also decide what communications assets are available, who is authorized to issue warnings, how they will do so, which EAS codes will be issued in their region, and how and when officials will participate in EAS tests. The committee stakeholders design the most effective EAS communications web, determine EAS monitoring assignments, and set up times and dates for EAS Required Monthly Tests (RMTs). They also decide who is authorized to issue warnings, how they will do so, proper authentication procedures and which EAS codes will be considered as essential within their region. Thus, the state and local plans map out how the system is "wired together." It is a given that EAS will be more likely to work correctly if the relevant SECC and LECC plans are complete, up to date, and undergo rigorous periodic testing.

As outlined previously, all radio and television stations and cable TV systems are required to broadcast national alerts immediately or leave the air. Stations and cable entities may, however, choose whether to broadcast un-expired state and local alerts and may decide to postpone broadcasting the alert until there is a natural pause in programming. No figures are available as to how many of the broadcast stations and

cable systems voluntarily carry local EAS activation requests. Estimates suggest only about 50% do so.

Since 1976, the predecessor of EAS, the EBS, operated first under an Agreement and then in 1981 under a Memorandum of Understanding (MOU) between the FCC, FEMA, NWS, and the FCC's National Industry Advisory Committee (NIAC). This MOU defined a framework for a cooperative effort for developing and evaluating EBS plans and related capabilities at the state and local levels of EBS operations. Since its implementation, the MOU has not been updated. The EAS was established on November 10, 1994, to replace the EBS.

Presently, successful operation of EAS depends on the following committees of volunteers:

a. The Primary Entry Point Advisory Committee (PEPAC) convened by FEMA
b. SECCs
c. LECCs
d. EAS Committees of the Society of Broadcast Engineers (SBE), the Society of Cable Telecommunications Engineers (SCTE) and by numerous local chapter activities of these two groups.

For EAS to operate effectively, state and local jurisdictions require a plan that specifies when and how the EAS may be activated. Support for developing and maintaining EAS plans has decreased over the years. Furthermore, the EAS is essentially an un-funded Federal government mandate, with the FCC focusing on enforcement of EAS regulations. Therefore the present EAS is quite inhomogeneous and prone to failure, unlike the earlier EBS where more operational plans were in effect. However, through rigorous oversight, planning and testing, EAS can function as an integral part of a warning system at the national, state and local levels.

In 1992, Patent Number 5,121,430 was issued to Quad Dimension Incorporated for the transmission of messages over radio and television stations. The patent has been re-issued several times based on re-examinations initiated by the Department of Commerce. The outcome of the patent issue is unknown at this time.

5. EAS Structure

The EAS structure is based in part on how the EBS was set up. A primary goal of the EBS planning program in 1976 was to develop an organized monitoring structure using the new EBS equipment. With the cooperation of broadcasters, NWS personnel and emergency officials, two prototype EBS plans were developed for use as models. One was a local plan for Parkersburg, West Virginia, and the other a state plan for New Hampshire. A key local broadcast station was selected in Parkersburg for the other stations to monitor for EBS messages. In New Hampshire, a key local station was selected for each EBS local area. These key stations then monitored each other to form a state network, with one of them acting as the state entry point for New Hampshire state level EBS messages. Eventually, almost all states were able to adopt the Parkersburg and New Hampshire models. In a few of them, it was impossible to form a network because of the distance between the key local stations. Some states solved this connection problem by using satellites or statewide radio and television networks. As examples, Nebraska uses its statewide Public Television Network, California uses its Emergency Digital Information Service (EDIS), and Florida uses a satellite service. The evolution of these relay systems occurred at low cost and used facilities that were already in place for other purposes.

Many of the old EBS networks were linked in a series configuration. This made them prone to single point failure. The main problem with this concept was that the FCC EBS regulations required that only one source be monitored. This meant that the monitoring chain would be broken if just one station failed to forward a message. This problem was

eliminated with the establishment of the EAS. FCC EAS regulations require that broadcasters and cable operators monitor at least two sources for EAS messages. Also, they must receive at least one weekly EAS test from each source. When the new EAS plans were developed, they incorporated many of the monitoring assignments developed by the EBS, with additional assignments to counter the daisy-chain problem. Almost all new EAS equipment is capable of monitoring up to six different assignments. Some EAS plans even have NWR as a secondary key local source as long as the local NWS office fully participates in EAS. There are several NWS offices that have FCC-Certified EAS equipment to send and receive EAS tests and local and state non-weather alert messages, but there are no procedures and authorities for those NWS offices to broadcast EAS national level messages that are longer than two minutes. Appendices F and G show parts of the EAS structure and Appendix H contains a list of equipment manufacturers that sell FCC-Certified EAS equipment.

Another concept that is becoming an integral part of EAS is the development of state and local web enabled monitoring structures. Under this idea, broadcast stations, cable systems, emergency operating centers, and NWS offices have EAS equipment set to monitor each other's signals in a robust web arrangement, where there is no central station or facility that is critical to the system. Local officials and NWS personnel can originate EAS messages, and broadcasters and cable operators can receive the messages from multiple sources.

Since the terrorist events of September 11, 2001, and a more recent flood of new abduction alert plans, there is growing interest in improving state and local web monitoring structures. With proper planning, broadcast stations, cable systems, emergency operating centers, and NWS offices can develop much more reliable and robust EAS monitoring webs.

6. National Level and the Primary Entry Point System

National level EAS messages, including Presidential messages, originate from federal government control points. Today, the messages are distributed through the PEP system to

selected broadcast stations throughout the country including Alaska, Hawaii and Puerto Rico. PEP stations were selected based on the location of the station's transmitter site in relation to predicted nuclear blast overpressure zones. The combined signal coverage area of all of the PEP stations is in theory approximately 90% of the continental U.S.

When CONELRAD and the EBS existed, the primary method of distributing national level EAS messages was through the Emergency Action Notification (EAN) Network, essentially a dedicated circuit to the major radio, television, cable and wire service networks. The networks then disseminated the message to their affiliates. The overall distribution of the network programming was under the control of AT&T's "Long Lines" group. The broadcast networks (ABC, CBS, NBC, etc.), national cable program suppliers (HBO, ESPN, etc.), and wire services (AP, UPI, etc.), voluntarily participated in the EAN network by providing personnel to operate EAN equipment at their program control centers. DCPA, a part of the Department of Defense, and later FEMA, leased the EAN equipment and dedicated communications circuits from AT&T.

The PEP concept was formulated in 1983 when the FCC and FEMA began studies to develop new national "Last Resort" EBS procedures. At that time, the breakup of AT&T was jeopardizing the viability of the existing EAN operations because AT&T would no longer be in total control of reconfiguring the telecommunications infrastructure. In addition, the broadcast networks began moving their program distribution from AT&T to their own leased satellite facilities.

In 1987, FEMA began funding PEP through an existing FEMA/FCC program called the Broadcast Station Protection Program (BSPP). The additional funding was used to increase the survivability of the selected PEP broadcast stations and enhance the national "Last Resort" procedures. Participating PEP station transmitter sites were provided with an emergency generator, fuel tank, programming equipment, a shelter area, and a communications link to FEMA via the Public Switched Telephone Network (PSTN). This

was later supplemented with a non-standard EAS encoder/decoder wired so that each station's programming could be taken over automatically for a PEP message.
In the early 1990s, FEMA established and funded PEPAC as a not for profit Corporation to advise FEMA concerning PEP system operations and improvements. PEPAC, Inc. is composed of one representative from each PEP station. This group elects a Board of Directors. In 1995, FEMA notified the FCC that funding for the EAN network was going to be discontinued and that the PEP system was going to be the only method to activate the national level EAS and transmit Presidential messages. The EAN equipment at the industry network control points and the dedicated circuits were removed from operation. Thus, the major networks and wire services were disconnected from the national level EAS.
The federal government conducts secure weekly closed circuit tests of the PEP system by sending signals to the EAS equipment at each PEP station site. Also, as part of EAS national level readiness testing, all broadcasters and cable operators are required to conduct EAS weekly and monthly tests to ensure their EAS equipment is in operating condition.

As part of a carefully structured plan that will lead to national PEP testing, PEP decoders at each station have already been programmed so they can originate weekly tests triggered by the FEMA Operations Center. All PEP stations have conducted successful tests of this function. The next step will be to do a PEP version of the EAS Required Monthly Test (RMT). The PEP RMTs will likely have an audio message in them to more closely emulate a real national message. All of this is working toward a coordinated national PEP test that could carry the voice of the President. Even though the test would sound like the normal RMT, it would likely be well publicized to avoid creating undue public concern.

In a real national emergency, a PEP message would interrupt all broadcast and cable programming for the President's message. A PEP message has priority over all other EAS events and will even interrupt a state or local EAS message in progress. State EAS entry points (broadcast stations, State Emergency Operating Centers, etc.) monitoring PEP

stations would receive the message and relay it in real time to all broadcast stations and cable systems in their state. A study by the FCC in the late 1990s revealed that many EAS state entry points couldn't monitor a PEP station signal even though the combined PEP station signal coverage area is approximately 90% of the continental U.S. The FCC NAC worked with National Public Radio (NPR) to address this issue. The NPR Board approved using their satellite distribution system (NPR cue channel) to allow NPR member stations to relay PEP messages into any state or local area EAS system in the country. There are several other approaches now under consideration by FEMA, PEPAC and others to reinforce the PEP distribution system including:

a. Adding more PEP stations and finding new communications links between them and the state EAS entry points.
b. Adding more network entities to become part of PEP.
c. Authorizing a dedicated and secure PEP satellite distribution network.
d. Adding secure Internet connections.

Even though no on-air tests of the PEP system have been conducted, there is convincing evidence that the system is capable of performing its mission. In 1997, an operator error at the PEP FEMA Operations Center caused an internal PEP test message to be transmitted over a few PEP stations. Stations that were monitoring these PEP transmitters had their programming immediately interrupted with the test message, proving for the first time albeit on a limited basis that the PEP concept really worked. The operator error problem has been corrected by revising PEP operating procedures.

PEP is designed as a last resort system that is available to the President under the direst national emergency situation. But to be successful, PEP must interface with state EAS systems to reach the rest of the 14,000+ broadcast stations and 10,000+ cable system headends. In the view of many EAS experts, PEP would only be needed if the President would not have instant access to the resources of the National Press Corps. This resource is the best and fastest way for the President to talk to the available listening and viewing public.

7. Broadcast Station Protection Program

Over the years, the protection provided under this program has proven to be invaluable when local emergencies knock out commercial power. BSPP stations are able to remain on the air to provide emergency information to the public.

At the start of the EBS planning program in 1976, over 600 broadcast stations were participating in the BSPP. As EBS state plans were developed and key state entry point stations were selected, BSPP equipment had to be provided to these selected stations because of their standing in the overall EBS structure. In some cases the BSPP equipment was moved from one station to another depending on the station's status within the state plan. During the 1980s, funding for the BSPP decreased to almost zero until the PEP program started. In the mid 1990s, FEMA began removing the BSPP underground fuel tanks because of concerns that they might begin to leak fuel. Some stations elected to take ownership and responsibility for tanks while others wanted the tanks removed. Today, there are about 40 stations in the BSPP that still have BSPP equipment in service including the PEP stations. At the PEP level, there is oversight and budget through the PEPAC whose purpose is to assure all PEP equipment is maintained properly and tested.
Options for Inputting State and Local Information into EAS

As specified in the FCC Part 11 regulations, EAS plans contain guidelines that must be followed by broadcast and cable personnel, emergency officials and NWS personnel to activate the EAS. The plans include the EAS header codes and messages that will be transmitted by key EAS sources (NP, SP, SR and LP). State and local plans contain unique methods of EAS message distribution such as the use of FM and TV subcarrier signals. According to FCC regulations, EAS plans must be reviewed and approved by the Director, Office of Homeland Security, Enforcement Bureau, FCC, prior to implementation to ensure that they are consistent with national plans, FCC regulations, and EAS operation. A State plan contains procedures for State emergency management

and other State officials, the NWS, and broadcast and cable personnel to transmit emergency information to the public during a State emergency using the EAS. A Local Area plan contains procedures for local officials or the NWS to transmit emergency information to the public during a local emergency using the EAS. Local plans may be included in the State plan. A Local Area is a geographical area of contiguous communities or counties that may include more than one state.

9. State EAS Planning

A key factor in the state EAS planning process is the work of dedicated and knowledgeable volunteers. While there has been a history of state level broadcast committee activity going back to the CONELRAD days, current State Chair appointments to what are now called the SECCs are traceable to several sources. Some SECC Chairs received their appointments to the old EBS National Industry Advisory Committee (NIAC) and/or the EBS Advisory Committee (EBSAC). The FCC Chairman and the FCC Defense Commissioner usually signed their appointment documents. Some received their appointments through recommendation from the outgoing Chair while others were appointed through their state's emergency management offices. Presently, the FCC claims no authority to appoint State EAS Chairs. They say this responsibility resides at the State level. At present, there is no clear procedure on how State Chairs are nominated.

To effectively interface with the national level EAS and the PEP system, all state EAS plans need to be current and tested regularly. Development and maintenance of EAS plans is accomplished voluntarily, as is the transmission of state level EAS messages. Some SECCs have roots dating back to CONELRAD and EBS. They have always led in state plan development. As stated by the FCC in its November 1994, Report and Order, "State and local SECCs and LECCs are responsible for the development of plans which detail procedures for stations and officials to follow for activation of the EBS (EAS)." These committees, made up of appointed volunteers, have performed a largely unsung and unpaid public service over the past 40 years. Members have come from the ranks of the broadcast engineering, professional

emergency management, and public safety telecommunications communities. To this core group has been added a growing number of state broadcaster association leaders, news directors and law enforcement communications specialists. The latter ranks have swelled now that a growing number of child abduction alert programs are tied into EAS.

State plan development began in 1976 after the FCC adopted the EBS two-tone attention signal. It provided a reliable method to alert station operators and was deemed an excellent opportunity to begin the development of state plans. Also, a General Accounting Office (GAO) report after the Xenia, Ohio, tornado in the early 1970s, recommended that the country's three warning systems be made to work together to provide a unified warning system. At that time the three systems were EBS, NOAA Weather Radio (NWR) and the National Warning System (NAWAS). As a result, the FCC, NWS, DCPA (now FEMA), and the National Industry Advisory Committee (NIAC), agreed to pool resources to finalize a state plan in all the states. Appendix K contains a copy of the 1981 MOU between the four entities. The plan included procedures on how the three Federal systems would complement each other at state and local levels. Working with the SECCs, at least one EBS planning workshop was scheduled in every state. After 5 years every state had finalized an EBS plan. Work then began to develop local EBS plans in each of the 600+ EBS Local Operational Areas. Eventually, over 400 EBS local plans were developed. Appendix F contains a current list of the EAS state and territory plans.

10. Local EAS Planning

Local EAS planning is usually performed by Local Emergency Communications Committees (LECCs). The SECC Chair appoints LECC Chairs. In states that do not have appointed LECC Chairs, local plans are usually included in the state plan. Most states developed their state plan before developing their local plans, which to date, number more than 100. Local planning was always an important issue because the vast majority of emergencies occur at the local level. State activations are few, while local activations

number in the thousands per year (see Appendix E). With the advent of AMBER alerts, the number of state and local activations will undoubtedly increase.

Planning at the local level involves several factors, and development of a local warning plan should include the following.

a. Meeting of the key local participants.
b. Defining local area boundaries.
c. Identifying area assets and authorities.
d. Identifying the sources of warnings and emergency information.
e. Developing local warning messages.
f. Identifying the types of emergencies that affect the area.
g. Developing authentication procedures.
h. Identifying the public distribution systems, i.e., communication links from local authorities to the public.
i. Conducting regular tests of the plan with local official participation.

Many local EAS committee efforts have seen the same volunteer dedication and spirit present in the state committees. As with state committees, broadcast engineers are now being joined by all stakeholders in the EAS process to plan and work together. Many local committees use email list servers to replace weekly or monthly meetings common in early EBS and EAS days.

11. EAS and NOAA Weather Radio

Even though EBS and NOAA Weather Radio (NWR) had been complementing each other as provided in the EBS plans developed since 1976, there was a disconnect between the two systems because they used different signaling techniques. EBS employed a two-tone signal and NWR used a single tone signal. After extensive testing by NWS in the 1980s, NWR started to use a new digital protocol as its signaling

technique. NWS named their digital protocol, "Specific Area Message Encoding" (SAME). When the FCC adopted its EAS digital protocol in 1994, it was identical to NWR's digital protocol. Initially, there was a minor difference between EAS and SAME in the code structure. Because of the operational nature of broadcast stations and cable systems, EAS messages needed to have codes for date/time and identification of the entity transmitting or re-transmitting the message. NWS expanded the SAME code structure to include all of the EAS codes. Thus the two protocols and the code structures became identical. Therefore, SAME/EAS signals received via NWR, AM, FM and TV stations and cable systems can be decoded using the same decoder. Broadcasters and cable operators can monitor each other and NWR with their EAS equipment. Appendix J contains examples of SAME/EAS messages.

Historically, EBS and EAS activations for weather warnings have far exceeded the activations for non-weather events. However, this is changing because of Amber child abduction plans now in place in many states and local areas. The February 2002, FCC Report and Order that increased the number of EAS event and location codes will also be a factor. Most of the new codes are for non-weather events and may motivate local emergency managers and law enforcement officials to plan for better local emergency public information that encompasses better emergency warnings. The new codes will allow for more specific text displays on EAS equipment, television sets, and displays in public venues. The new codes could lead to better information for displays such as changeable highway message signs that are not really a part of or directly connected to the current EAS.

An important part of the EAS and NWR data structures is how locations are identified in the messages. Every SAME/EAS message contains a location code or codes to identify the message target area(s). Every state, county, part of a county, and off shore (marine) area, has a specific number according to the Federal Information Processing Standard (FIPS) and NWS warning areas. Even after all of above locations are cataloged, there are still hundreds of unused FIPS numbers that could in theory be used to identify unique

areas and situations such as nuclear power plant zones, military bases, neighborhoods, and even groups of individuals such as police, emergency personnel, etc. Therefore, EAS might in the future be better targeted to any of these unique areas and situations, provided procedures and equipment are in place ahead of time. Oregon and Washington are two states now using unique FIPS codes in certain special warning areas. Other areas are considering using unique FIPS location codes.

Most warning experts agree that the use of EAS by civil authorities needs to increase since this is where both the authority and responsibility for issuing local warnings really rests. One way to accomplish this is if civil authorities purchase, install and operate EAS equipment and create robust communications links to local NWR entry points and to entry points for broadcast stations and cable systems. Then, through established EAS planning processes and longstanding industry cooperation, many more civil authorities will be able to directly transmit emergency messages on NWR and broadcast and cable facilities accurately, rapidly, and seamlessly. With prior coordination, the messages can be transmitted even when the facilities are unattended. With almost 1,000 NWR transmitters, NWR is a significant national asset that has a proven track record saving lives and property. Its interface with EAS is a crucial link in the nation's warning structure.

12. Cable in the EAS

The cable television industry has a long history of involvement in providing emergency alerts, but had not been involved in EAS until more recently. The local alerts were usually required by the local franchise authority and controlled by the mayor or other local official where all channels went to black and live audio from a telephone dial-up replaced the program audio. The FCC adopted a phase-in of EAS obligations for cable systems after the industry was formally brought into the program pursuant to the 1992 Cable Act.

Cable television systems transitioned into EAS by system size. Systems serving more than 10,000 subscribers were required to begin participation by December 31, 1997. Systems serving fewer than 10,000 subscribers were required to participate by October 1, 2002. Generally, all cable systems are required to provide the alerts visually and aurally on all channels. An exception was made for systems below 5,000 subscribers to provide audio messages on all channels with the visual message on a single channel. The cost of participation for small systems can be very high on a per subscriber basis. Limiting the visual message to a single channel allows the use of lower cost, legacy equipment.

With a cost of $6,000 and up for basic EAS equipment packages, very small cable systems were hard-pressed to afford participation. While the FCC declined to exempt small cable systems from the EAS, waivers to delay EAS implementation have been granted upon sufficient showing of need. Small systems owned by large Multiple System Operator (MSO) companies could afford to purchase the equipment but systems owned by small independent operators often could not without having larger systems' revenue to help spread the cost. The FCC granted over 260 waivers for approximately 2,500 small cable systems to delay implementation from 12 to 36 months.

13. Cable Override Techniques -- Analog

Cable operators ordered EAS encoder/decoder units similar to those used by broadcast stations. These units were then tied to three primary switching network types listed below in order of lowest to highest cost.

a. Comb Generators – A cable television system headend originates the complement of channels delivered to the subscribers and can be thought of as a collection of individual, low-power television transmitters. A comb generator is a box that generates a complete set of substitution channels all using the same audio and video source. Earlier versions of comb generators supported audio only and blacked out each channel's picture. The single channel visual approach for small systems allowed the reuse of these older units,

where they already existed. When an EAS message is received, an automatic switch activates switching from the complement of channels to the comb generator box to affect the override. This approach is also known as Radio Frequency (RF) switching.

b. IF switch – Each channel is processed to a common Intermediate Frequency (IF) before being up-converted to its individual output channel. An IF switch substitutes the EAS visual and aural message to each channel, yielding a higher signal quality message than using the comb generator approach. IF switching is more expensive, but allows the option of selectively switching in order to not override broadcast signals that already have EAS messages in place. Selective override is a difficult process with a comb generator requiring extensive filtering.

c. Baseband switch – Baseband switching replaces the individual audio and video signals with the EAS message. Another baseband option allows overlaying the visual message onto the top line of the video programming in a less disruptive manner than a full screen override.

14. Cable Override Techniques – Digital

Digital channels are more difficult to interrupt than analog channels. With digital, switching is accomplished in the individual subscriber's Set Top Box (STB) converter. Presently, there are only two approaches:

a. Force tune method – When an EAS alert is received, a signal is broadcast to all digital receiving devices (e.g., STB or DTV) commanding them to tune to a specific analog channel that is carrying the alert message. At the conclusion of the message, the digital receivers tune back to the channels they were tuned to prior to the alert.

b. Overlay method – When an EAS message is received, a signal is broadcast to all digital receiving devices. This signal contains data for the receiver to compose a text banner at the top of the screen with the visual EAS message and an audio computer file of up to two minutes duration to replace program audio.

Because the audio file is limited to two minutes, a warning such as an EAN national alert must use the force-tune method since an EAN can exceed the 2-minute limitation imposed on all other alerts. The two digital override methods are described in the Society of Cable Telecommunications Engineers (SCTE) standard SCTE 18 2002 (formerly DVS 208), Emergency Alert Message for Cable, approved as a joint standard with CEA as ANSI-J-STD-042-2002, and available at www.scte.org.

15. Cable Television EAS issues

a. Weighing subscriber disruption and irritation (dealing with phone calls) vs. alerting to hazards.
b. Local franchise-required alerts – conflict between local franchise-required alerts vs. EAS alerts, plus the requirement for maintaining two override systems and preventing collisions. These franchise-required alerts can also override local television reports dealing with an emergency. In this situation, FCC regulations specify, "Cable systems and wireless cable systems may elect not to interrupt EAS messages from broadcast stations based upon a written agreement between all concerned. Further, cable systems and wireless cable systems may elect not to interrupt the programming of a broadcast station carrying news or weather related emergency information with state and local EAS messages based on a written agreement between all parties".
c. Amber - How to provide meaningful information to subscribers when the cable system's EAS equipment is operating in an automated mode.
d. Difficulty in targeting alerts to affected areas versus widespread distribution of alerts.

16. EAS Audience

EAS reaches a very large number of people during the day, but a very limited number overnight. Radio stations reach 95% of Americans older than 12, but Americans listen to

the radio on average only 12% of their day, mainly between 6 a.m. and 6 p.m. (Arbitron, 2001 Radio Today). While as many as 22% of the population may be listening at any given time during the day, less than 1% are listening in the middle of the night. More than 98% of U.S. households have at least one television but the average set is in use only 31% of the day (Nielsen Media Research, 2000 Report on Television), and 17% of the households (Satellite Broadcasting and Communications Association) now get their signals directly from direct broadcast satellite sources that do not participate in EAS. While the EAS does include codes that could activate devices while people are sleeping or otherwise not tuned in, only a few companies are producing such devices. The following statistics are from the Television Bureau of Advertising and the Radio Advertising Bureau:

Total U.S. Households		# of people/HH		% of HH with Media		# of Americans with Media
TV	108,620,000	x	2.7	X	98.2%	= 288 million Americans w/one or more TVs
Radio	108,620,000	x	2.7	X	98.5%	= 289 million Americans w/one or more radios

TV Stats Courtesy of the Television Bureau of Advertising (TVB)

- 98.2% of all U.S. households have television sets. This percentage has been the same for the past five years.
- In 2003, 75.2% of U.S. households have more than one set.
- In 2001, Nielsen Media Research reported that the average TV household watches seven hours and forty minutes of TV a day.
- Based on U.S. Census data, there were 2.62 persons per household in 2000. That number is rounded up to 2.7 for the above figures.

Radio Stats Courtesy of the Radio Advertising Bureau (RAB)

- RAB reports 98-99% of all Americans own one or more radios. The penetration of radio is so great that the U.S. Census stopped recording this data after the 1990 Census.
- Radio reaches 96% of all consumers every week and 77% of all consumers every day.
- Each week, persons age 12+ spend an average of 20 hours tuned in to their favorite stations.
- Among persons 12+, 37% of radio listening takes place at home, 44% takes place in the car and 20% is done at work or in other places besides the home.
- Radio reaches 84% of adults age 18+ each week while they're driving.

Cell Phone Statistics

- As of the date of this report, there are at least 147 million Americans carrying cellular phones according to the Cellular Telecommunications & Internet Association (CTIA). The latest statistics are available at www.ctia.org.

17. Where Americans Turn in a Crisis

Harris Interactive, a worldwide market research and consulting firm, reports that adults in the U.S. referred to the television (78%) and the radio (15%) as their primary source of information after the terrorist attacks on the World Trade Center and the Pentagon. A survey conducted by TVB on consumer media habits and perceptions found that broadcast television is cited by more adults as their primary news source than other mediums (broadcast TV was named by 43.6%, cable TV by 28%, newspapers by 12.1%, radio by 9.2%, public TV by 3.9%, and the Internet by 3.2%).

Television Households

Year	Total U.S. Households	TV Households	% HH with TV
2000	102,680,000	100,800,000	98.2%
2001	104,080,000	102,200,000	98.2%
2002	107,400,000	105,500,000	98.2%
2003	108,620,000	106,700,000	98.2%

% of Radio Listeners on Weekdays & Weekends

Time Frame	Percentage
Monday-Sunday 6 a.m. to 10 a.m.	85%
Monday-Sunday 10 a.m. to 3 p.m.	85.6%
Monday-Sunday 3 p.m. to 7 p.m.	83.8%
Monday-Sunday 7 p.m. to midnight	62.4%
Monday-Sunday midnight to 6 a.m.	37.2%

18. Numbers of EAS and EBS Messages Transmitted

On November 10, 2002, there was a very large outbreak of tornadoes that stretched from Mississippi to Pennsylvania. Seventy-five persons died. Due to the magnitude of this event, NWS formed a service assessment team, as is done for similar weather related disasters, to examine the warning and forecast services provided to emergency managers, government agencies, and the public. Some of the data collected by the team involved the interface between NWS and the media for eight EAS Local Areas stretching from Indiana to Pennsylvania. All of the EAS Local Primary sources (in this case they were all radio broadcast stations) in the eight areas monitor NWR. They received 76 messages via NWR during this outbreak. Using their EAS equipment, they re-transmitted 48 of the messages, most within 18 seconds. Those messages that were not re-transmitted were messages that were either for areas beyond the EAS Local Area or were not warning messages. Based on the monitoring assignments specified in their state and local EAS plans, broadcasters and cable operators are required to monitor the LP sources in their area for EAS messages. However, they are not required to receive or re-transmit state or

local messages. If they elect to re-transmit the messages, broadcasters and cable operators are permitted to send them in either an EAS or non-EAS format (no digital or alert signals), such as video crawls, symbols, etc.

Between 1983 and 1986, the FCC received 3,915 EBS activation reports from broadcasters. Broadcasters filed the reports voluntarily. All of the activations were for local emergencies. Included in the reports was a question concerning what organization had requested EBS activation. NWS was the requesting organization 76% of the time while Emergency Services requested 10%, broadcast station staff 7%, and via an EBS receiver alert 7%. These statistics probably still hold true today since the great majority of EAS activations are for weather warnings issued by NWS through NWR.

Another set of data for 4,168 EAS activation reports was analyzed for the years 1990, 1991 and 1992. NWS was the requesting organization 68% of the time while Emergency Services 8%, broadcast station staff 5%, and via EBS receiver alert 14%. The increase in EBS receiver alerts as the activation vehicle can be attributed in part to the fact that more stations were relying on the receiver as a means of receiving emergency information. This is possibly due to stations cutting costs by dropping news staff, wire service affiliation, or direct monitoring of NWR and NOAA Weather Wire. Appendix E contains the data for the above analysis plus EBS activation statistics for each state and territory.

Undoubtedly, there will be increased EAS activation by Emergency Services as EAS equipment is installed in EOCs and emergency services personnel become trained in EAS operations.

19. EAS Funding

a. Federal Support

During the history of the EBS/EAS, the federal government funded some portions of the system through the Broadcast Station Protection Program (BSPP) and the Emergency Action Notification (EAN) network. Funding for the EAN Network was eliminated in 1995. BSPP funding was reduced to zero in the 1980s. BSPP funding did resume building the PEP system, but the funding was only for the PEP and not the EAS system as a

whole. When BSPP funding dried up, there was hope that states and local sources would fill the void, possibly through the use of the funds provided by FEMA grants to the states or federal funds that are distributed after large-scale disasters. But, essentially, that did not happen.

Today, the only federal funding for any part of the EAS has been through PEPAC, Inc., a not-for-profit incorporated group that exists to advise and manage the PEP program. Membership is made up of representatives from each of the PEP stations. Officers are elected annually from the membership. FEMA plays no part in its management. Except for one year of missed funding, up until 2001 PEPAC received $150,000 annually from FEMA. This money was used for training PEP station engineering staff. The training program includes regular contact with the PEP station by telephone, email, etc. and an annual meeting of the participants, whose agenda provides for orientation and refresher presentations and discussions critical to the program and at least one major technical presentation specific to the program and its future.

The $150,000 stipend also helped maintain the infrastructure equipment at the PEP stations originally provided by FEMA in earlier years. This has included Electromagnetic Pulse (EMP) protection, rigorous annual testing and preventive maintenance of the emergency power generator, the fuel tank, and fuel quality, as well as EAS and high frequency equipment.

The Department of Justice is now making available several million dollars in matching grants for state AMBER programs. This funding is not specifically intended for EAS and could be spent in other areas specific to recovery of abducted children such as changeable highway signs. Within the grant's guidelines, each state must determine what aspects of its AMBER program will receive the funding. While some of this money could be used to improve state EAS infrastructure, it is unlikely this funding will be of any significant benefit to the EAS. There is no way of knowing if this funding is going to be only a

onetime opportunity. Therefore, the AMBER funding source cannot be counted on to provide near term or sustaining support for EAS.

b. Society of Broadcast Engineers (SBE) Support

The SBE, to the degree it is able, has tried to fill the vacuum in EAS training and management at the national and local chapter levels. The SBE EAS Committee and SBE FCC Liaison Committee efforts receive a great deal of voluntary support from SBE members, for education of LECC and SECC members, and "Comments and Reply" comments on FCC items. However, there is at this time no money available for travel and other activities separate from SBE national and regional events.

Nationally, the SBE supported the now extinct FCC National Advisory Committee (NAC) by providing some of its best technical experts. This committee worked with the SBE Board and the SBE Liaison Committee to make comments to the FCC on EAS issues. The Chair of the SBE Liaison Committee offers services on a travel cost reimbursement basis to local SBE chapters, regional conventions, and others who want intensive EAS training. Presently, SBE is not able to provide financial support for the Chair's EAS activities. At the local level, many local SBE chapters support EAS activities. The degree of support is voluntary with no real financial assistance.

c. Broadcaster Association Support

Within the last year, especially when the AMBER issue surfaced, several state broadcaster associations lent their support. Motivated by members who raised concerns about failed tests and other EAS issues, some associations funded projects to help EAS. Notable but not alone in this effort are the California Broadcasters Association, Nevada Broadcasters Association, Arizona Broadcasters Association and the New Jersey Broadcasters Association. Since any support and funding comes from association station members, there is no assurance that these efforts will continue or expand to other states' broadcaster associations.

d. State and Local Support

While some states have funded positions with some management EAS oversight, the people in these positions are often not devoted exclusively to EAS duties. Some states have purchased EAS equipment for their EOC and 911 centers, but even some of these are not linked to the system. There is a great lack of training for personnel who use the equipment. Funding for travel and meetings is almost non-existent and often depends on volunteer resources. Very few local areas fund positions within emergency management for the EAS. Most address EAS programs and issues with one or more people who have other full time jobs. Very few localities have purchased EAS origination equipment. Other local funding for the EAS is essentially non-existent.

20. EAS Concerns

a. Financial

The Government to Media Subcommittee of the FCC Media Security and Reliability Council (MSRC) recently surveyed the SECC (EAS) Chairs concerning the state level EAS (see Appendix F). In the survey many states identified issues having to do with outdated or poor state EAS plans, and a lack of functional links between emergency management warning origination points and broadcast and cable EAS entry points. The lack of funding came up repeatedly as a major concern in the survey. Also identified was the lack of EAS-specific training for law enforcement and emergency management. As to physical infrastructure elements that could benefit from funding, current thinking indicates that a state-by-state needs assessment would have to be conducted. Some EAS experts believe that this assessment itself would have to be a funded project.

State government interest in supporting EAS varies widely from state to state. As might be expected, California, Florida and other areas like the so-called "Tornado Alley" region and states most often in the path of hurricanes and that experience frequent natural disasters commit more resources to EAS. In many states, there is a desire to improve EAS plans and infrastructure, but funds and direction are lacking. In far too many states there seems to be little or no interest at this time in supporting the EAS with financial and other resources.

b. Operational

While deserving of attention as a part of an overall look at the EAS, operational security risks should be kept in perspective. Even a false activation of EAS would not, by itself, have catastrophic results. Research into the behavior of warning recipients suggests that a single false alarm, without corroboration from other credible sources, generally elicits only limited reaction from the public. This interpretation is supported by the history of actual false alarms; for example, the extremely limited effects of the erroneous national attack warning message issued accidentally on February 20, 1971 over the (then) EBS network. Even a properly authenticated and genuine-appearing warning may not generate a strong reaction if it contradicts an overall perception of limited current risk. This underscores the importance of managing, integrating and coordinating EAS seamlessly with other available warning systems.

Nonetheless, EAS vulnerabilities could be exploited during periods of heightened public anxiety and uncertainty. Internet Protocol (IP)-based EAS systems and control links could be subjected to "denial of service" attacks aimed at preventing them from functioning when they should, as could any other IP-based information stream. Those most familiar with the EAS system acknowledge that there are security issues. Many of them are direct results of a system that was conceived, designed and deployed at a time when system security was not as much of a national concern and threats within our national borders were considered highly unlikely.

Today's EAS system is most often used to disseminate weather warnings and more recently Amber alerts. There are many instances of the EAS having been used locally to warn of civil disturbances, evacuations, and other emergencies. These local warnings are not well documented. Low cost and ease of operation for local warnings were the primary design criteria for EAS technology. Sophisticated security and encryption were not. The complete protocol is a matter of public record.

Because of the attacks upon our country, the emergency management community has been forced to take a hard look at the security of all protocols used to disseminate information during emergencies, to include response to acts of terrorism of many forms, EAS security is now very much an issue. Since attacks involving chemical or biological weapons are likely to require use of the EAS system to provide official alert information to the public, it is possible that an attacker could decide to cripple the EAS or use it to spread damaging disinformation. Although such scenarios must be considered for the future, no malicious activations of the EAS system have been reported to date.

EAS distribution methods have perhaps the greatest potential for security concerns. Today's system uses a wide variety of distribution links arranged in an uncoordinated and sometimes-complex architecture that is specified in state and local EAS plans. While it is theoretically possible to seize some of these communications links with minimum effort or expertise, a perpetrator would have to know a great deal about monitoring assignments and relative Radio Frequency (RF) signal levels, and be able to comply with protocol requirements to create a successful disruption or a system override. Since two Frequency Modulated (FM) RF signals on the same channel can sometimes act in unpredictable ways, inserting a viable bogus link would require at minimum a high power transmitter and a directional antenna aimed at each potential entry point.

In some locations broadcast stations and cable systems are running in the unattended mode. This is permitted as long as certain FCC rules are followed. However, when a station is operating unattended and no operator is physically present, no one would be available on-site to intervene should an unauthorized seizure occur. In fairness, it must be noted that unless a broadcast station is operating under those FCC Part 73 rules for unattended operation, an operator is always on duty. At this time, most broadcast stations serving large populations do not operate unattended.

There is also a concern about physical security and unauthorized use of the system at EAS activation sites. All FCC certified EAS encoders have the capability for password

protection. It is up to each station and cable system to implement sufficient security. At this time, there is no way of knowing which stations use password security. Lack of password security does not by itself mean an unauthorized EAS event can be aired. Other stations' security measures may be in place. Again, there is no way at this time of cataloging the station-by-station overall security picture.

Another valid security concern is the potential for unauthorized use of the system. Thousands of station operators, from part time interns to chief engineers have been trained to use the encoders. Most are without any form of background investigation. Absent a station-by-station survey, there is no way to know what the actual state of physical security might be, particularly at stations that run in the unattended mode. Mitigating this risk is the fact that a single bogus EAS activation at any one station will not cause a national warning crisis. As will be shown in the next section, the risk for unauthorized activations by operators at PEP stations is even lower.

At the EAS national level, we find the network of PEP station links utilize electronic authentication. It is theoretically possible (though technically quite difficult) to interfere with one or more of them. Late in 2001, a PEPAC engineering group concluded that the most secure portion of the EAS is the national level. While the PEPAC task force developed specific information on why PEP is more secure than other parts of the EAS, it would not serve the public interest to go into more detail in this unclassified report.

The EAS system is now being asked to play a significant role in our national warning strategy. Lack of federal coordination as well as a source of assured funding at any level necessary to allow for control and scrutiny over this system pose valid security issues and concerns. The FCC has oversight of EAS system compliance. Oversight of the other aspects of EAS is a loosely defined but combined ad hoc effort by the FCC, NWS, FEMA, DHS, the states, and volunteer state and local EAS committees. As a result, there is confusion over who is responsible for system security and what the security standards and measures should be, especially at the state and local levels.

21. EAS Looking Forward

The existing EAS system of today has many positive attributes. The system, when deployed, represented the application of the best engineering practices available at the time given the specific design constraints of a system that must provide in band audio signaling, and remain relatively inexpensive to allow deployment nationwide. It carries traffic on a daily basis, and is available now to disseminate a warning to our populations at risk.

But the system of today is not without problems of such a significant nature as to render its suitability for the task at hand to be in serious question. The support of many broadcasters and cable operators has been lost. They generally consider today's EAS to be a largely un-managed and an un-funded federal mandate for a system that they need to participate in and maintain which in their view basically does not work. This is not the case in all states and EAS acceptance and participation varies from state to state. Its un-managed voluntary nature at the state and local levels, and daisy chain delivery system, contribute to what essentially becomes a "black hole of assured delivery".

The EAS system of tomorrow can be built today, if we utilize the existing EAS technology already in place. We have available for our use as a foundation, a system with a build-out that includes over 14,000 broadcast stations and 10,000 cable systems. With minor modifications, the system is capable of delivering reliable warnings to large and small geographic areas and populations. This existing infrastructure should be used to meet our national need for a viable system. Any new system design should take advantage of this existing infrastructure and be fully backwards compatible with the existing equipment that is in place. It would be difficult to replace or rebuild such a capability today at a reasonable cost.

Technology has of course moved on. There are significant new technologies available to designers today that can be used to supplement and improve the capabilities of the existing EAS system. Perhaps of the greatest significance is the ability of satellites to deliver an EAS

message directly to broadcast or cable outlets. Satellite technology can be used to deliver an EAS message very quickly (within seconds). It is very reliable, has available high levels of security, and does not have the geographical limitations of today's EAS system. Satellite facilities currently exist in nearly all radio, television, and cable systems for the purpose of delivering network feeds. These systems with proper coordination could easily be configured to carry EAS traffic.

The Internet is another new technology that may have an impact on the EAS system. Although not suitable for use as a primary delivery mechanism, it does provide great value as a redundant or back-up path for communications, including valuable follow-up information on emergencies. One very great value of the Internet is its widespread deployment and general availability at most broadcast and cable outlets, as well now in many homes and businesses.

The Public Television Network is building out a digital transmission capability that when completed anticipates penetration of their digital signal to 95% of the population. These stations have a demonstrated commitment to public broadcasting and can clearly define a benefit to both their network and the public that they serve, resulting from an expanded role in carrying emergency management information and the delivery of warnings to the general public. Such a digital network, if integrated into the national warning strategy, could play a significant role in reliable warning dissemination to both the public and the first responder community.

Although FCC regulations permit the use of the two-minute audio window for the delivery of text and video messages, those standards have yet to be developed or implemented. Future systems may use IP technology to digitally encode the audio, text or video message and transmit a file rather than actual audio. Digital messages are much more suitable to today's transmit media. Satellite delivery would use IP rather than delivery of audio, and as such would also be able to transmit text files, photos, and streaming live audio if necessary.

One of the greatest challenges to establishing the existing EAS system as a critical component of our nation's warning systems is overcoming the difficulties that result from its current configuration as an un-managed system with essentially no funding. In order for any system to be considered as a "national" warning system, it needs to be a managed and funded system. The digital transmission medium of today can easily support the interactive requirements of such a managed system.

EAS can also benefit from the development of an EAS chip. The EAS chip would be capable of responding to emergency alerts according to the specific programming entered by the owner of the device. It would be available to alert the user of threatening events even if the actual host device is turned off. Such a device could save many lives annually, particularly in areas of the country that are subject to significant hazardous weather activity. This is similar to the turn-on capability of many NWR receivers and the few EAS AM/FM radios.

Much of this section has been devoted to the gains and benefits possible by using existing digital technology such as satellite distribution and Internet connectivity to supplement and strengthen both the delivery capabilities and security of the existing EAS system. Such an approach would be fully backwards compatible with the equipment already in place and present a great value for a minimal expense. This solution may suffice for the next 5 to 7 years. Technology advancements would dictate that we begin to consider now the next generation of the EAS system. Significant changes in sensor abilities, data processing capabilities, delivery techniques, and alerting mechanisms will all contribute to the EAS system of the future.

22. Recommendations

Based upon this assessment, the Partnership for Public Warning makes the following recommendations regarding the future of the Emergency Alert System:
The Department of Homeland Security should assume a leadership role for creating an effective national public warning capability. DHS, in concert with other appropriate federal agencies, should strengthen the Emergency Alert System by doing the following:

a. Provide leadership and oversight as necessary to manage the EAS system.

- Evaluate and support the implementation of new and emerging technologies, which provide greater bandwidth capabilities and reach large segments of the population.
- Ensure that any new technologies are backward compatible with the existing EAS/SAME equipment at 15,000 broadcast stations, 10,000 cable head ends and 1,000 NWR transmitters.
- Integrate the EAS and NWR systems with the emergency management community, by providing a cost effective, reliable, and secure method of activating the EAS system by state and local emergency management agencies.
- Institute reporting requirements for system activations to allow for the development of effective after action and service assessment reports.
- Develop and administer procedures and standards for the requirement, analysis, evaluation, and approval of state and local plans and a needs assessment of system equipment and connectivity.
- Require mandated compliance with EAS system upgrades within 180 days of official notice or regulation adoption date.
- Provide training resources for all EAS stakeholders designed to insure that the EAS system is maintained in an operational status, and that all participants are trained and qualified as necessary to perform their role in the use of the system.

    i. Distribute and promote these resources through course offerings at FEMA's Emergency Management Institute, and by providing regional, state, and local training workshops as necessary, including on-site assistance.

    ii. Involve strategic partners in this training effort such as NEMA. IAEM, SBE, NAB, SCTE, NCTA, and state broadcaster associations.

    iii. Attend and participate in broadcast and cable industry events and conventions to form a closer alliance with the broadcast and cable communities.

- Develop and administer an education initiative using public service announcements to raise public awareness of the role of the EAS system in public warning.

b. Strengthen and improve the PEP system.

- Improve delivery methods to enhance system security, reliability, and robustness.
- Increase testing (to include on air tests as necessary) to ensure that the PEP system is maintained in a ready state.
- Expand the reach of the system by adding PEP stations and including major broadcast networks, national cable program suppliers, and satellite based media outlets.
- Implement policies and procedures at the activation points to allow the use of the PEP system for the purpose of public warning.

c. Update the existing Memorandum of Understanding that defines a framework for a cooperative effort for developing and evaluating state and local plans, to more accurately reflect current EAS capabilities and to clearly delineate management and oversight responsibilities. As appropriate, the MOU should also incorporate other federal and non-federal agencies participating in the EAS.

d. Find avenues to provide appropriate federal government funding and resources to support and operate the EAS and ensure that the federal government does not impose unfunded mandates on state and local governments, or the broadcast and cable communities. Study incentives for industry to participate voluntarily.

e. Support a public private partnership to develop the standards, policies and procedures to integrate the EAS into a comprehensive national public warning capability.

23. History of the EAS

The EAS and its predecessors evolved out of a Cold War need to warn the American public in the event of a nuclear attack. It has been in various forms a concern of every Presidential administration since 1951.

1950's

In 1951, President Harry Truman established CONELRAD (CONtrol of ELectromagnetic RADiation). CONELRAD required most broadcast stations to go off the air during a national emergency. It was designed to prevent an enemy from using AM broadcast transmitters as homing beacons for bomber or missile attacks. The stations designated to remain on the air switched their transmitting frequencies to either 640 or 1240 kilohertz and operated in rotation to fool existing state-of-the-art airborne direction finding equipment. A White House Statement of Requirements (WHSR) for CONELRAD was issued in 1952. CONELRAD became operational in 1953 when the President participated in its nationwide testing. All radio and television networks were enlisted to relay Presidential messages to CONELRAD participants.

In 1958, the FCC established the National Industry Advisory Committee (NIAC) consisting of volunteer industry personnel who provided expert advice to the FCC concerning emergency plans, rules, policies, etc.

1960's

In 1960, an updated WHSR was signed by President Eisenhower. It was further updated and signed in 1962 by Press Secretary Pierre Salinger on behalf of President Kennedy. By 1963, the accuracy of missile and bomber guidance systems made CONELRAD obsolete. However, President Kennedy wanted a last ditch capability to address the nation on short notice during a national emergency. The Emergency Broadcast System (EBS) was developed to meet this need. It allowed participating broadcast stations to remain on the air on their own channels, and retained the CONELRAD network distribution system to get Presidential messages to each participating station. EBS retained a CONELRAD signaling technique that required broadcasters to turn their transmitters off and on in a scheduled

pattern to activate special EBS receivers. The FCC issued EBS regulations in Title 47 Code of Federal Regulations (CFR) Part 73. This formalized the use of the major broadcast networks to transmit national (Presidential) EBS messages to participating stations.

At the same time, the Broadcast Station Protection Program (BSPP) was established as a complement to EBS to support the core elements of the EBS infrastructure. The intent of the BSPP was to try to ensure that high power AM stations with wide coverage areas would be on the air after a nuclear attack. The Office of Civil Defense (OCD), in cooperation with the Army Corp of Engineers, funded the BSPP. It was designed as a national program to protect broadcast facilities deemed necessary by OCD to transmit a national level (Presidential) EBS message. Under the BSPP, selected stations were provided with an emergency generator, fuel tank, programming equipment, fallout shelter, and two-way radios to link the broadcast station with their local Emergency Operating Center (EOC). The fallout shelter became the property of the station and the equipment became the property of the FCC. The equipment was made available to each station under an Equipment Loan Agreement (ELA) between the FCC and the station licensee. Some stations also received hardware for Electromagnetic Pulse (EMP) protection. In 1966, the WHSR was updated by President Johnson and in 1969 by President Nixon.

1970's

On February 21, 1971, at the time of a regularly scheduled test, the National Warning Center at NORAD in Colorado transmitted an Emergency Action Notification (EAN) message, instead of the scheduled test message. The EAN message was supposed to be issued to the industry network control points only when the President has activated the national level EBS. The EAN message was sent over the AP and UPI wire services, which were for EBS purposes under NORAD's control. Many broadcast stations did not immediately respond to the EAN message as required by the FCC EBS rules. An extensive study of the event was done and a detailed report was issued. Some stations reported that they thought the message was a mistake because it was issued at the same time as the routine NORAD weekly wire service test message. Others searched for

confirmation from other sources such as the major networks but could find none. Some stations simply failed to hear the wire service alarm or see the printed wire copy message. Some stations actually aired the message.

In 1972, the government, in cooperation with the NIAC, corrected deficiencies they found as a result of the NORAD error. Their corrective actions were to:

- Remove the "Attack Warning" function from EBS. This action removed NORAD as an activator of the national level EBS. Only the President could now activate the national level EBS.
- Revise and simplify the EBS instructions issued by the FCC such as the Part 73 EBS rules, EBS Checklists, EBS National Control Procedures, Authenticator Lists, etc.
- Improve the activation and authentication procedures.

In 1976, the FCC replaced the old CONELRAD inter-station alerting technique with a two-tone EBS Attention Signal. NIAC had been testing the new two-tone signal extensively for years and recommended that the FCC implement it. The two-tone signal improved the technical performance and reliability of inter-station message relay for EBS since it did not require broadcast transmitters to be turned off and on as did the CONELRAD technique. It also permitted the production of inexpensive home radios with EBS alerting circuitry. The unique attention signal made it possible to un-mute radios tuned to participating stations. The FCC amended its EBS regulations in Part 73 to permit use of the new signal. All FCC EBS instructions were amended to reflect use of the two-tone Attention Signal.

Also in 1976, the Defense Civil Preparedness Agency (DCPA), a part of the Department of Defense; the FCC; the NWS, a part of the Department of Commerce National Oceanic and Atmospheric Administration (NOAA); and the NIAC signed an Agreement to promote a coordinated effort to develop detailed state and local plans to permit use of EBS for warning the public about local disasters. Until this time, EBS was rarely used by state or

local authorities for natural or man-made disasters. Some local areas had devised their own warning networks, and their successes were seen as ways to increase the utility of the EBS. The FCC, DCPA and NWS partnered to give assistance in many forms in the states and territories to broadcasters and state and local officials in their EBS planning. These three federal entities worked with state and local emergency management to provide training materials and host a series of meetings across the nation. Also, a guide to implement the agreement was written entitled "Plan for Nationwide Use of the Emergency Broadcast System for State and Local Emergencies." In 1979, President Carter signed an updated WHSR.

1980's

In 1981, the 1976 Agreement to develop state and local plans was updated as an MOU (Appendix K). DCPA was now part of the newly formed FEMA, and new administrators were in place at the agencies. The planning effort had made tremendous progress as every state and territory and more than 400 localities completed EBS plans.
In 1982, President Reagan signed an updated WHSR and the FCC reorganized the NIAC to include new Working Groups.

In 1983, the FCC and FEMA began studies to develop new national level "Last Resort" EBS procedures. The national level EBS consisted of dedicated circuits from the Federal government to each of the major radio and television networks. FEMA funded the circuits and equipment located at the major network control points. The networks then distributed national level EBS messages to their affiliates via their own facilities. AT&T provided a "Last Resort" capability in the event of the failure of the dedicated circuits because AT&T controlled the nation's telecommunications infrastructure. Under the "Last Resort" procedures, the federal government would contact key AT&T program control centers to patch national level EBS messages to the networks for distribution. But, the breakup of AT&T jeopardized this plan since AT&T would no longer be in total control of reconfiguring the telecommunications infrastructure and the number of AT&T

program control centers was being reduced. To compound the challenge, the broadcast networks began to bypass AT&T and use their own leased satellite facilities for program distribution. Any new "Last Resort" procedures would need to bypass the AT&T program control centers and the major network control points, most of which were located in high risk areas. The new "Last Resort" procedures would likely have to provide communications links from the Federal government directly to selected broadcast station transmitters at some distance from the intense overpressures predicted for nuclear detonations in high-risk areas. However, funding to implement the new "Last Resort" procedures was not available until the late 1980s.

In 1984, Executive Order 12472 reaffirmed EBS operational responsibilities. The Order instructed FEMA to "develop, upon request and to the extent consistent with law and in consonance with regulations promulgated by and agreements with the Federal Communications Commission, plans and capabilities for, and provide policy and management oversight of, the Emergency Broadcast System, and advise and assist private radio licensees of the Commission in developing emergency communications plans, procedures and capabilities." Also, the FCC would, "Review the policies, plans and procedures of all entities licensed or regulated by the Commission that are developed to provide national security or emergency preparedness communications services, in order to ensure that such policies, plans and procedures are consistent with the public interest, convenience and necessity."

In 1986, the national level EBS dedicated circuit network was upgraded and renamed the EAN (Emergency Activation Notification) Network. The network upgrade included new equipment and new EBS National Control Procedures. Also, the FCC dissolved NIAC and replaced it with two new committees: the National Security and Emergency Preparedness Advisory Committee (NSEPAC) and the Emergency Broadcast System Advisory Committee (EBSAC).

In 1987, a special EBS Working Group, established by the FCC Executive Director to include participation from FEMA, NWS and the National Telecommunications and Information Administration (NTIA), released a report concerning the survivability of the national level EBS during and after a nuclear attack. One of the conclusions of the report emphasized that national on-air tests needed to be performed to insure that the national system worked from end to end. However, this conclusion was never implemented. Also, FEMA began funding the "Last Resort" procedures developed in 1983 to backup the EAN Network. The "Last Resort" procedures became the PEP system. Goals of the PEP were to increase the survivability of 30 selected continental U.S. and 4 territorial broadcast stations with equipment under the BSPP and provide secure communication links to these stations from the designated Federal government-warning center.

During the 1980s, NWS began investigating a new signaling technique to replace the single tone signal used by NWR. When transmitted on NWR, the single tone signal would turn on all NWR consumer receivers within range of an NWR transmitter. An audio message following the tone alerted the consumer to a weather announcement. This signaling technique alerted more people than might be necessary. NWS wanted to have a system that would target specific messages to a specific area. NWS studies resulted in the development of a digital coding system called, "Specific Area Message Encoding" (SAME) or Weather Radio SAME or WR-SAME. WR-SAME specified that a digitally coded signal be transmitted before the single tone signal. The digital signal contained codes for the type of weather event, the location(s) and the valid time period of the message. A complete message consisted of the digital codes, the single tone signal, the audio message and an End of Message digital code. A special NWR consumer receiver could be programmed to respond to messages by the type of event and location. NWS would begin to deploy WR-SAME in the early 1990s.

As early as the mid 1980s, it was becoming apparent to some broadcast engineers that EBS equipment and procedures did not lend themselves to automated operation or expeditious dissemination of emergency information. Pending future FCC approval,

some broadcasters were already thinking about operating their stations as unattended facilities at certain times, especially during the overnight hours. However, broadcasters found it difficult to operate EBS equipment in the automatic mode primarily because of the lack of an end-of-message signal. EBS transmissions consisted of the EBS two-tone signal followed by an audio message. The audio message contained information that had to be received and acted upon by an operator. The other option that was not thought to be a good solution was to automatically re-transmit all received EBS messages.

The basic idea behind any upgrade to EBS was to develop a way to speed up the delivery of emergency messages. Broadcast engineers wanted to avoid the delay associated with the process of listening and repeating emergency messages. Society of Broadcast Engineers (SBE) members in the mid-west began experimenting with various signaling schemes. In Colorado, demonstrations of frequency shifted Digital Tone Multi Frequency (DTMF) were presented at various SBE-sponsored events. These added some security to the signaling techniques. Other ideas included being able to scan several sources of information looking for the shifted DTMF header, keeping costs low, and using background, i.e. non-broadcast, channels and levels of alert to inform news departments on off-line channels.

1990's

In the early 1990s, trade journals published articles concerning the above efforts. In 1990, President Bush signed an updated WHSR and released a one-minute video statement praising industry participation in EBS. The message was part of a video training tape for broadcast station operators, which was voluntarily produced by Durham Life Broadcasting in Raleigh, North Carolina.

In 1991, the FCC approved a Notice of Inquiry seeking technological improvements to EBS; and a Rule Making/Inquiry to shorten the length of the EBS two-tone signal, prohibit false EBS signals, improve broadcast station remote control operation, and revise the weekly EBS test script.

In 1992, FEMA further upgraded the EAN Network dedicated circuitry and equipment and began testing the communications links to the PEP stations. The FCC approved a Further Rule Making to improve the EBS structure, including equipment and operations.

In the early 1990s, many broadcasters began serious planning to operate their stations as unattended facilities. Also at this time, the Cable Act of 1992 required standards to ensure that cable systems provide emergency information to their subscribers. The Act read in part, "Each cable operator shall comply with such standards as the Commission shall prescribe to ensure that viewers of video programming on cable systems are afforded the same emergency information as is afforded by the emergency broadcasting system pursuant to Commission regulations." But, it was not practical to install EBS equipment at cable head ends that were mostly unattended. So the FCC issued a Notice of Inquiry looking for methods to improve EBS and a Notice of Proposed Rule Making to revise certain EBS requirements. All of these events led the FCC to consider replacing EBS with a new alerting system.

In December 1992, the Commission invited manufacturers to demonstrate their proposed solutions to alert the public. Several companies participated and showed different approaches. SBE filed Comments and Reply Comments in response to all of the FCC EAS Notices. The demonstration was followed by field tests in 1993 determine the feasibility of new alerting techniques under real operating conditions. Some of the goals of these tests were to examine the ability of broadcast, cable, satellite and other means to transmit digital information; to test speed, redundancy and reliability factors; and to determine operator needs for equipment responsiveness. During this exploratory time, the government received a great deal of volunteer assistance and free use of private facilities. Help came from broadcasters, cable operators, individuals, equipment manufacturers, state telecommunications experts, emergency managers, state broadcaster associations and the SBE. Many of the individuals who participated were volunteer members of the FCC's Emergency Broadcast System Advisory Committee (EBSAC).

The FCC later wrote in its 1994 Report and Order that,

> "The Western Field Test was conducted June 27 through June 30, 1993, in Denver. More than 75 representatives from broadcast stations, cable systems, satellite companies, emergency management offices, consulting engineering firms, amateur radio organizations, and manufacturers of alerting equipment and consumer end products, voluntarily provided their own personnel and resources for the tests. In-band, sub-carrier, satellite, HF radio, VHF, UHF, microwave, and telephone were the primary transmission modes tested. More than 35 devices were demonstrated during the tests. Three focus groups and one composite focus group offered some insight into audience perception of the systems and equipment."
>
> "The Eastern Field Test was conducted September 12, 1993, through September 15, 1993, in Baltimore. The tests involved more than 60 representatives from government, industry, and manufacturing. Technical/emergency management personnel and others served as official observers to record the test results. Testing sites included the State Emergency Operation Center, experimentally licensed AM and FM stations, 25 FCC field facilities, the NWS office, a cable head-end, existing AM and FM stations, and Spanish language television and radio stations."
>
> "The goals of both tests were to examine the ability of broadcast, cable, satellite, and other means to transmit digital information; to test speed, redundancy and reliability factors; to determine operator needs for equipment responsiveness; to test as many of the parameters in the Notice of Proposed Rule Making/Further Notice of Proposed Rule Making in different situations as feasible; and to experiment with an architecture broad enough to encompass other technologies as they become available. In response to the field-testing, we (FCC) received

> 42 Comments and 9 Reply Comments. The test data demonstrated that (1) monitoring of multiple sources of emergency information was successful in providing reliability and redundancy; (2) a small geographic area could be alerted without affecting other areas; (3) transmissions could be easily relayed from point-to-point via different transmission means; (4) equipment could automatically receive, store, and forward alerts and messages; (5) in-band and sub-carrier transmissions could co-exist; (6) satellite and cable technology could interface with the EAS digital transmission scheme; (7) mobile reception of in-band and sub-carrier were equally susceptible to multi-path, distortion, shadowing, and other propagation anomalies; and (8) consumer radio receiver equipment could turn itself on from an "off" position in response to broadcasters' digital signals, such as Radio Broadcast Data System (RBDS) signals."

The FCC further stated, "we adopt new rules for the establishment of an Emergency Alert System that is designed with a flexible architecture to accommodate current and future technologies and that will deliver instantaneous emergency information to the public. The new system will emphasize speed, reliability, and efficiency."

The FCC received hundreds of comments concerning what technology to adopt to replace EBS. Some even suggested that each state should be allowed to develop its own system. Most recommended a single standard specified in federal government regulations because; (1) interstate areas could not support multiple systems; (2) one nationwide standard would allow manufacturers to mass-produce lower cost hardware; and (3) broadcast station and cable system personnel would have to learn the procedures for only one system regardless of where they were employed. Some technologies possessed characteristics that had certain advantages and disadvantages over the technology adopted and of course there were policy and promotional issues in the mix. The FCC 1994 Report and Order that established EAS was supportive of a number of alternate technologies but

the final standard was the NWS SAME protocol with additional code elements. The FCC encouraged the use of alternate technologies in support of EAS. Some states have adopted such technologies as specified in their State EAS plan. Some close to the EAS standards process felt that politics significantly influenced the proceedings. Future standards processes should strive to keep undue political influence at bay and ensure that the best warning technology is selected.

On November 10, 1994, the FCC adopted a Report and Order that formally established the EAS to replace EBS. The EBS rules in Part 73 were replaced by EAS rules in a new Part 11. Local cable systems were included in EAS. Highlights included the following:

a. Any transmission means could be used to send and receive EAS alerts and tests including satellite, telephone, radio, pagers, etc.
b. EAS messages could be formatted for specific events and locations.
c. The old EBS designations for key broadcast stations were replaced with new EAS designations; i.e. EAS Local Primary (LP) replaced EBS Common Program Control Station (CPCS).
d. The EAS digital signal could be used to display visual messages on devices with view screens.
e. The EAS digital signal could be interfaced with computers and other digital devices.
f. The EAS digital signal time stamp code would prevent the transmission of outdated or duplicate messages.
g. EAS equipment would have to be able to monitor at least two sources for EAS messages. Eventually, almost all EAS equipment would be able to monitor up to six sources.
h. EAS equipment can store two minutes of audio message for later retrieval automatically. National level messages are not limited to the two minutes.
i. National level messages would not use the EAS "Store and Forward" model. If an EAS device were captured by a national level EAS code, the audio message would

not be limited to two minutes and would only terminate on receipt of a national End Of Message (EOM) code.

j. The EBS weekly test would be replaced by two new EAS tests: a weekly test of the digital signal (Required Weekly Test - RWT) and a monthly test (Required Monthly Test - RMT). The RMT would include an audio message that could be developed by state and local officials.

k. All incoming EAS messages would be visually displayed on the EAS equipment at broadcast stations and cable systems.

l. The EAS digital signal could be used on any FM or TV sub-carrier signals.

m. The EAS digital signal would be identical to the NWS WR-SAME signal, therefore, EAS equipment would have to be capable of decoding NWS NOAA Weather Radio (NWR) SAME digital signals.

n. EAS equipment could be operated in either the manual, semi-automatic or automatic mode.

o. The old EBS two-tone signal would be transmitted after the EAS digital signal and before the audio message. This would allow legacy EBS two-tone alert decoders to still function and maintain an alerting capability to consumers, schools, hospitals, and other critical warning recipients with such equipment. It would also serve as an audio alert signal before the audio message.

p. After the audio message, an End-Of-Message (EOM) code would be used to reset the equipment. This EOM code can be used as a signal to return broadcast stations and cable systems to normal programming automatically.

Between the years of 1994, when the FCC established EAS, and 1997, when broadcast stations had to install and operate EAS equipment, an effort was made to update the state EBS plans bearing in mind the new features that would be available with the new EAS equipment. Workshops were held in several states, with the cooperation of the SECCs, LECCs, SBE, SCTE, NAB, and state broadcaster associations. Also during this time, equipment manufacturers were developing prototype EAS equipment for certification by the FCC Laboratory. By the time of the 1997 EAS equipment installation deadline, the

manufacturers had stockpiled enough equipment to meet the needs of the 14,000+ broadcast stations. One year later, large cable systems with 10,000 or more subscribers had to have EAS equipment installed along with switching equipment to provide EAS messages on all program channels. By October 2002, all cable systems and wireless cable systems had to meet this requirement.

In 1995, President Clinton signed an updated WHSR. On October 30, 1995, FEMA informed the FCC that the White House had determined that the President's daily access to the media is considered very reliable under all but the most severe conditions and that the Primary Entry Point (PEP) system will serve as the cornerstone for the new national level EAS replacing the EAN Network. The EAN Network was disconnected and the national networks were removed from the national level EAS. Also, the FCC amended Part 11 by adopting a Memorandum Opinion and Order clarifying certain EAS requirements for broadcasters and cable operators.

In 1996, FEMA developed two Civil Preparedness Guides. CPG 1-40 provides guidance to State and local governments to assist them in working with broadcasters and cable operators in their areas to develop State and local area EAS plans. CPG 1-41 is an EAS program guide for State and local jurisdictions.
In 1997, the FCC amended Part 11 by adopting a Second Report and Order modifying EAS as it applies to cable systems. Highlights included the following:

a. Systems that serve 10,000 or more subscribers shall install EAS equipment and provide EAS audio and video messages on all channels by December 31, 1998.
b. Systems that serve 5,000 or more, but fewer than 10,000 subscribers shall install EAS equipment and provide EAS audio and video messages on all channels by October 1, 2002.
c. Systems that serve fewer than 5,000 subscribers shall either provide national level EAS messages on all programmed channels (including the required EAS test messages), or install EAS equipment and provide a video interrupt and audio alert

message on all programmed channels and EAS audio and video messages on at least one programmed channel by October 1, 2002.

d. Wireless cable systems shall participate in EAS on the same basis as wired cable systems. Wireless cable operators that serve 5,000 or more subscribers per fixed station transmission site or head end shall install EAS equipment and provide EAS audio and video messages on all channels by October 1, 2002. Wireless cable operators that serve less than 5,000 subscribers are subject to the same requirements as wired cable systems that serve fewer than 5,000 subscribers.

e. The requirements of existing local franchise agreements for special warning systems will not be preempted by the EAS so long as they do not conflict with EAS requirements under FCC Part 11 rules. (See website address in Appendix I).

In 1998, the FCC adopted a Third Report and Order in response to a Second Further Notice of Proposed Rule Making concerning amending the EAS rules that would prohibit cable systems from overriding broadcasters' emergency related programming with state and local EAS messages. The FCC reaffirmed its earlier decision whereby cable operators and broadcasters should reach a mutual agreement concerning the override of television signals on cable systems.

Also, the FCC sent a letter to FEMA asking if FEMA and the White House Communications Agency (WHCA) wanted to continue use of the EAS Authenticator Lists for national level messages. The Authenticator Lists were used to verify procedures and personnel under conditions that no longer existed under the EAS. The new EAS equipment at broadcast stations and cable systems operates automatically upon receipt of a national level message with the proper codes in the EAS digital signal. After checking with WHCA, FEMA responded by letter dated August 25, 1998, that they and WHCA had no further requirement for the EAS Authenticator Lists.

The FCC's EAS Handbook, required to be posted at EAS broadcast and cable control points, was updated in 1998 to reflect deletion of the authentication procedure. However,

it still contained references to outdated national level procedures. This temporarily caused confusion in the broadcast and cable communities should a national level activation take place before the Handbook would be reissued.

The FCC established the National Advisory Committee (NAC) to replace the EBSAC, which in turn had replaced the NIAC in 1986. NAC held its first meeting in 1998 to both organize and discuss EAS issues. They met once each subsequent year. While the NAC was primarily a group of the most learned EAS broadcast engineers tracing its lineage to engineers critical to making CONELRAD work, the membership was gradually expanded to include cable operators and emergency managers and other stakeholders in EAS. NAC membership included the Chair of PEPAC, the Chairs of the SBE and SCTE EAS Working Groups, and several senior SECC Chairs. As provided for in the NAC Charter, the NAC was composed of three subcommittees: Training and Education, Planning and Technical. The NAC Charter specified the following list of duties: (1) develop a cooperative working relationship with government agencies involved in emergency communications, (2) represent the views of industry, (3) study and submit recommendations to the FCC related to the planning and operational procedures of the EAS, (4) assist the FCC in the implementation of its new EAS rules, (5) develop a cooperative working relationship to foster voluntary participation in EAS planning by state and local industry members, (6) assist the SECCs and LECCs in establishing a list of state and local officials authorized to activate EAS, (7) develop programs at the national, state and local levels for industry and public service entities, (8) produce video and audio training tapes, (9) produce Public Service Announcement (PSAs) to educate the public about EAS and, (10) provide information to the SECCs and LECCs to help them develop and maintain state and local plans.

2000's

In 2000, Part 11 was amended by FCC Order adopted March 31, 2000, to conform to the discontinuance of the use of the EAS authenticator Lists.

In 2001, the FCC updated the EAS Handbook to reflect deletion of the authentication procedure and adopted a Notice of Proposed Rule Making to:

a. Solicit comment on requested revisions to the Part 11 rules governing EAS set forth in petitions for rule making filed by the National Weather Service (NWS) and the Society of Broadcast Engineers (SBE).
b. Revise Part 11 to eliminate references to the now-defunct Emergency Action Notification (EAN) network and its participants, the major networks and cable program suppliers.
c. Delete the requirement that international High Frequency (HF) broadcast stations purchase and install EAS equipment.

In 2002, the FCC adopted a Report and Order amending Part 11. This was in response to the NWS and SBE petitions. The technical and operational revisions included the following:

a. Add new digital EAS codes for state and local events, including a Child Abduction Event Code, and new location codes.
b. Permit broadcast stations and cable systems to program their EAS equipment to selectively display and log state and local EAS messages.
c. Increase the time for each participating EAS entity to re-transmit the EAS monthly test from 15 to 60 minutes of receipt of the message.
d. Revise the minimum required broadcast modulation level of EAS codes to conform to established broadcast audio processing techniques.
e. Permit broadcast stations to air the audio of a Presidential EAS message from a higher quality, non-EAS source.
f. Eliminate references to the now-defunct Emergency Action Notification (EAN) network.
g. Eliminate the requirements that international High Frequency (HF) broadcast stations purchase and install EAS equipment and cease broadcasting immediately upon receipt of a national level EAS message.

h. Exempt satellite/repeater broadcast stations that rebroadcast 100% of the programming of their hub station from the requirement to install EAS equipment.

i. Authorize cable systems serving fewer than 5,000 subscribers to meet the October 1, 2002 deadline by installing certified EAS decoders, to the extent that such decoders may become available, rather than both encoders and decoders.

j. Provide that low power FM stations need not install EAS decoders until one year after the Commission certifies any such decoders.

In 2002, the NAC held its last meeting and was not continued by the FCC. The FCC did not renew its Charter when it expired in July 2002. The FCC established the Media Security and Reliability Council (MSRC) consisting of senior broadcast executives (www.fcc.gov/MSRC/). MSRC was particularly interested in the survivability and restorability of broadcast facilities during crises. Several committees of front-line workers were formed under MSRC and two of these are addressing some key EAS issues.
Thus, the EAS and its predecessors have been in development for more than 50 years, each time adapting several times over that period to meet changing needs and new technologies. From the late 1970's to the early 1990's, considerable effort was made to train state and local personnel in EAS operations and to develop state and local plans. This work has come to a virtual halt in recent years as Federal funding and personnel have been withdrawn.

D. Reports Issued By PPW

April 25, 2002 – Comments provided to the Director, Federal Bureau of Investigation, regarding the proposed Homeland Security Advisory System
http://www.partnershipforpublicwarning.org/ppw/docs/ppw_response.pdf

July 5, 2002 – Comments provided to Governor Tom Ridge, Director, Office of Homeland Security, regarding the proposed Homeland Security Advisory System

http://ppw.us/ppw/docs/hsas_report.pdf

November 25, 2002 – "Developing A Unified All Hazards Public Warning System", A Report by the Workshop on Effective Hazard Warnings
The purpose of this report is to propose a national all-hazard public warning architecture and to outline some of the issues that will need to be addressed in creating such an architecture.
http://ppw.us/ppw/docs/11_25_2002report.pdf

May 16, 2003 – "A National Strategy for Integrated Public Warning Policy and Capability"
Results of a PPW sponsored workshop that was held at the Emergency Management Institute in Emmitsburg, MD, to develop the first draft of a 'Public Warning National Strategy'
http://ppw.us/ppw/docs/nationalstrategyfinal.pdf

May 2003 – "Accessing And Originating Warnings from Consequence Management Tools"
The purpose of this document is to explore issues involved in making warning information available as a resource to improve overall emergency management and to help emergency managers generate timely and authoritative public warnings.
http://ppw.us/ppw/docs/consmgmttools.pdf

September 2003 – "Public Alert and Warning: A National Duty, A National Challenge: Implementing the Vision"
Plan to create a national consensus on a national, all-hazard public warning capability while providing the standards, policies and relationships necessary to forge that capability.
http://www.partnershipforpublicwarning.org/ppw/docs/natlstrat_implement.pdf

December 30, 2003 – Letter to DHS Undersecretary Frank Libutti with summary of public comments received on the Homeland Security Advisory System

February 2004 – "The Emergency Alert System: An Assessment"

The purpose of this document is to provide a definitive description and evaluation of the EAS past and present as a basis for recommending ways to make immediate improvements.
http://www.partnershipforpublicwarning.org/ppw/docs/eas_assessment.pdf

March 16, 2004 – "The Homeland Security Advisory System: Threat Codes & Public Responses", PPW testimony before the House Subcommittee on National Security, Emerging Threats and International Relations
Testimony presented by the PPW to the House Subcommittee on National Security, Emerging Threats and International Relations, on March 16, 2004.
http://www.partnershipforpublicwarning.org/ppw/docs/hsas_testimony.pdf

June 2004 – "Protecting America's Communities: An Introduction to Alert and Warning"
This document provides a brief overview of the many considerations that should be taken into account when developing or evaluating a public warning process and system. It is intended to assist emergency managers and officials, both public and private, in understanding and developing effective warning systems.
http://ppw.us/ppw/docs/handbook.pdf

June 2004 – "Alerting America: A Directory of Public Warning Products, Services and Technologies"
This directory provides information regarding the state-of-the art in public warning products, services and technologies. It has been prepared to assist emergency managers, government officials, decision makers and the public in understanding and locating public warning options
http://ppw.us/ppw/docs/directory.pdf

E. 1981 State and Local EBS Memorandum of Understanding

State And Local Emergency Broadcasting System (EBS) Memorandum Of Understanding Among The Federal Emergency Management Agency (FEMA), Federal Communications Commission (FCC), The National Oceanic And Atmospheric Administration (NOAA), And The National Industry Advisory Committee (NIAC)

1. Purpose

This Memorandum of Understanding defines a framework for a cooperative effort among FEMA, FCC, NOAA's National Weather Service (NWS) and the NIAC for developing and evaluating effective EBS plans and related capabilities at the State and local levels of EBS operations. The agreement addresses the following:

a. The joint and cooperative actions necessary to define and achieve objectives.

b. The joint and individual responsibilities of FEMA, FCC, NOAA's NWS and NIAC.

c. The coordination link between the Federal, State and local levels of government and the broadcast industry.

d. The mechanism required to define the status and objectives, related programming and budgetary needs, and coordinated implementation.

2. References

a. Plan for Nationwide Use of Emergency Broadcast System for State and Local Emergencies, revised September 13, 1976.

b. Communications Act of 1934.

c. Executive order 11490, dated October 30, 1969.

d. Executive Order 12127; dated March 31, 1979.

e. Executive Order 12148, dated July 20, 1979.

f. Disaster Relief Act of 1974.

g. Federal Civil Defense Act of 1950, as amended.

3. Objectives

a. Achieve capabilities at State and local level by which EBS can be used effectively to disseminate warning notifications and emergency public information in relation to natural disaster[1], manmade disaster[2], and attack.

i. Natural disasters include tornadoes, flash floods, hurricanes, severe winter storms or quickly developing blizzards, volcanic eruptions, earthquakes, tsunamis, ', forest fires, and serious air pollution episodes.

ii. Manmade disasters include civil disorders, commercial power outages, chemical spills, industrial explosions and fires, discharges of toxic gases, nuclear power plant accidents, transportation accidents involving hazardous materials, and industrial accidents with possible severe environmental pollution episodes.

b. Enhance a unified planning effort of warning dissemination and other emergency information by the broadcast industry, Federal, State, and local government agencies.

c. Develop current guidance, procedures and model plans for State and local activation of the EBS.

d. Evaluate EBS State and local operational area plans and communications system effectiveness, define deficiencies, and program cost-effective upgrading.

e. Assign in the planning, the responsibility for maintaining procedures and lists of authorized persons that can activate the EBS during an emergency.

f. Ensure that the EBS is complementary to existing emergency public information and warning systems and plans.

g. Continue efforts for implementation of new plans and improvement of existing plans at the State and operational area levels. Undertake a cooperative program to evaluate the quality and effectiveness of the operational plans.

4. Agency Responsibilities

The responsibilities outlined in this section are those related only to the cooperative efforts of the participating agencies to meet the objectives of this agreement, as it applies

to State and local aspects of EBS.

FEMA is responsible for:

a. Coordinating with FCC and NOAA's NWS, the scheduling of EBS operational area planning seminars, and providing for appropriate notification to State and local government officials.

b. Assisting in providing instructions to the public through the State and local EBS, in support of effective comprehensive emergency preparedness.

c. Assisting in the development and evaluation of the State and local plans and guidance.

d. Assisting in the establishment of a list of authorized State and local officials who can activate the EBS when required.

e. Coordinating the guidelines of the EBS National Plan with each of its regional offices. FEMA Regional Directors will coordinate representation of State and local emergency management officials at the EBS planning meetings.

f. Monitoring and evaluating the effectiveness of EBS, in support of comprehensive emergency preparedness.

The FCC is responsible for:

a. Maintaining, establishing, revising and coordinating the rules and regulations for the EBS and providing for all coordination with State Emergency Communications Committee (SECC) and Operational Area (Local) Emergency Communications Committee (OAECC) members.

b. Ensuring that the integrity of the EBS is maintained at the State and local level for immediate activation should the need arise.

c. Taking the lead in a continuing education program for local broadcasters, and State and local officials related to responsible use of the EBS for local emergency public information and warning purposes (including providing literature, displays, and presentations).

d. Providing staff personnel on site to assist in State and local level operational area planning and follow-up assistance as appropriate

e. Maintaining a unified coordination link between the ten subcommittees of the NIAC and the agencies listed in this agreement.

f. Providing FEMA Regional Directors and NOAA's NWS regional office EBS focal points with signed copies of State and local EBS operational area plans when they are completed.

g. Assisting in developing EBS operational area planning meetings and giving official advance notice to FEMA and NOAA's NWS Headquarters.

NOAA NWS is responsible for:

a. Preparing and issuing warnings for quick developing weather events that are life threatening and requesting activation of the EBS using NOAA Weather Radio and NOAA Weather Wire Service and telephone as the primary means of delivery wherever these are available. Earthquake prediction is the responsibility of the U.S. Geological Survey. The NOAA's NWS will disseminate the earthquake warnings. Ensuring that warnings are delivered as quickly as possible to all concerned.

b. Establishing NOAA’s NWS EBS focal points for dealing with State and local government agencies.

c. Evaluating the effectiveness of using the EBS to disseminate NOAA's NWS warnings to the general public during major and significant natural disasters.

d. Designating a NOAA's NWS EBS program manager to coordinate necessary actions between NOAA's NWS, FEMA, FCC, and the NIAC as well as oversee the necessary activities within NOAA's NWS. The NOAA's NWS EBS program manager will notify the NWS regions and field offices of impending meetings and coordinate planning actions

e. Coordinating with the broadcasters and local officials. The NOAA's NWS Meteorologist-in-Charge (MIC) or Official-in-Charge (OIC) of the NWS field offices will suggest which weather events warrant activating the local EBS.

f. Supporting the State and local EBS operational area planning effort. The MIC or OIC will be responsible for coordinating and reviewing NOAA's NWS role and signing the final version of the EBS plan for their local warning area of responsibility.

The NIAC is responsible for:

a. Developing a cooperative working relationship between its subcommittees and the participants of this agreement.
b. Studying and submitting recommendations to the FCC from the subcommittees related to the planning and operational procedures of the EBS.
c. Acting as the National representative of industry for this agreement.
d. Developing a cooperative working relationship to foster voluntary participation in the EBS Operational Area Planning by State and local industry members.
e. Assisting SECC and OAECC in the establishment of a list of authorized State and local officials that can activate the EBS when required.

The Joint responsibilities of the four participants are:

a. To provide coordinated advice and guidance to Federal, State and local government officials and the broadcast industry in developing EBS operational area plans.

b. To hold State and local EBS planning meetings until all sections of the United States have completed and signed EBS State and local plans and existing plans are upgraded.

c. To assure that State EBS and local operational area plans are tested and exercised and follow-up evaluations are made in each State.

d. To conduct an annual review of the performance of the EBS program during the past year and recommend program changes, as required.

e. To review and develop EBS publications, videotapes, slide presentations and floor displays.

f. To review annually and-revise as necessary the "Plan for Nationwide Use of the Emergency Broadcast System for State and Local Emergency."

g. To develop plans annually to share costs of publications, displays, awards and brochures necessary for the education of industry, government officials and the general public.

h. To assure that each Agency's field offices advise their Headquarters of significant problems or events.

6. Implementation

a. This memorandum shall take effect upon its signing by authorized representatives of the respective agencies.

b. Within one calendar year of the date of this memorandum, FEMA, FCC, NOAA's NWS and the NLAC will review this agreement, and coordinate such revisions to this agreement as may be necessary.

7. Amendment And Termination

a. This memorandum may be amended at any time by mutual written agreement of all parties.

b. The memorandum will be in effect until terminated.

c. The memorandum may be terminated by one or more parties based on a written notification of intent, followed by a period of 90 calendar days of receipt of such notification.

d. Approved by: Administrator, NOAA, August 3, 1981
Defense Commissioner, FCC, August 20, 1981
Director FEMA November 9, 1981
Chairperson, NIAC, April 21, 1982

F. Partnership for Public Warning Accessibility Resources

This heading contains additional information regarding the Partnership for Public Warning and accessibility. It may also contain content that can be found elsewhere on this site. These accessibility resources have been gathered together, in this separate section, to provide easy availability to those for whom accessibility is a foremost concern.

1. Public Warning: The Top Priority for Deaf and Hard of Hearing People

http://www.partnershipforpublicwarning.org/ppw/docs/cheppner-final.pdf

A presentation given at the PPW hosted "Second National Summit on Public Warning in America" on June 28th, 2004.

2. PPW Partners with WGBH on Project Addressing Communication & Warning Needs of People with Sensory Disabilities: October, 2004

http://www.partnershipforpublicwarning.org/ppw/wgbh.html

Information regarding a PPW/WGBH National Center for Accessible Media collaboration to research and disseminate data gathered from emergency alert providers, local information resources, telecommunications industry and broadcasting representatives, and consumers concerning how to best make emergency warnings accessible.