

PARTNERSHIP FOR
PUBLIC WARNING

**Developing A Unified All-Hazard
Public Warning System**

A Report by
The Workshop on Effective Hazard Warnings

Emmitsburg, Maryland

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The Partnership for Public Warning (PPW) was incorporated in January 2002 as a 501(c)3 public/private non-profit institute as recommended in 2000 in the report *Effective Disaster Warnings* authored under the National Science and Technology Council at the White House (www.nmic.noaa.gov/CENR/NDIS_rev_Oct27.pdf).

Our mission is to promote and enhance efficient, effective, and integrated dissemination of public warnings and related information so as to save lives, reduce disaster losses and speed recovery.

We anticipate being chartered as a Utilized Federal Advisory Committee, providing a formal basis for Federal employees to work with representatives of all other stakeholders of warning systems.

Our goal is to work together towards a full range of national standards, protocols and priorities related to public warning systems.

Our vision of the future is that most people at immediate risk from natural or manmade disasters will obtain timely and accurate information about what is highly likely to happen or is happening via a wide variety of dissemination systems so that they can respond in ways that reduce their losses.

We anticipate that private industry will develop most dissemination systems as successful business ventures and that warning receivers will be included in many different types of consumer electronics devices that might even self-activate in times of crisis.

Developing A Unified All-Hazard Public Warning System

Executive Summary

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.

A warning is information provided to people at risk in advance of (alert) or during (notify) a hazardous event, with the objective of inducing those at risk to take appropriate action to reduce losses. The goal of warning is to prevent hazards from becoming disasters. The success of a warning is measured by the timely and appropriate actions taken to mitigate hazards and secure personal safety.

Warnings are primarily the responsibility of local jurisdictions with assistance from state and Federal governments. Warnings are also issued by critical industries such as nuclear power plants or oil refineries, typically as a requirement of their license to operate. Most warnings are issued from any one of thousands of government sources, but most systems to deliver warnings rely on industry for receivers and typically for the many aspects of warning distribution. Today many different warning systems exist that are quite heterogeneous, are not interoperable, and do not reach most of the people at risk. The many government agencies issuing such warnings are inconsistent in their terminology leading to confusion and inadequate response.

Bringing diverse warning resources together and focusing on a unified all-hazard warning system will improve the effectiveness of all warnings significantly. More people at risk will be warned. Improved warning systems and procedures will clearly save significant numbers of lives every year, will reduce losses from natural and man-made disasters, and will speed recovery. Building and operating a unified all-hazard public warning system is beyond the capability of any local community, state, Federal agency, or industry. It requires the cooperation of all these groups to work effectively together in partnership. There is a need for Federal leadership, and while many Federal agencies are responsible for warnings, there is no single Federal agency that has clear responsibility to see that a national, all-hazard, public warning system is developed and utilized effectively. Primarily because of this, an industry capable of unifying and standardizing warnings has not developed. We believe that the new Department for Homeland Security should take responsibility for leading development of a national all-hazard public warning architecture in partnership with other Federal agencies, state and local governments, industry, universities, and other stakeholders.

The findings and recommendations contained in this report are the product of an ongoing dialogue among some of the nations leading experts in warning systems. A group of scholars, emergency managers, agency officials and consultants met in Emmitsburg, Maryland June 19-23 to both evaluate the Homeland Security Advisory System and to consider ways of improving the effectiveness of current public warning systems. There was a solid consensus at this meeting that improvement of existing diffuse warning efforts can be achieved most effectively and at the most reasonable cost by developing an all-hazards public warning system in the US. This consensus is quite notable in that significant change will be required

within many of the agencies represented to develop such a uniform system. Further, the willingness to embrace the work necessary to implement an all-hazards warning system is evidence that the need for such a system is considered extremely compelling.

The challenges ahead are significant but tractable. They include:

- Generating adequate real-time data and intelligence upon which to base a warning
- Determining the point at which data are indicative that a warning should be issued,
- Using standard warning terminology that is easily understood by message recipients
- Refining the message for a very diverse population with different levels of education and responsibility
- Providing the warning in a standard protocol that allows industry to implement interoperable systems,
- Delivering the warning to just the people at risk and emergency responders through multiple communications channels
- Educating and training people to act in appropriate ways
- Constantly evaluating and reevaluating the effectiveness of the overall system.

In developing an all-hazards warning system, we must acknowledge and incorporate insights derived from over 60 years of Federally funded social science research on how people respond to disaster warnings and how the warnings can be made more effective. This body of research challenges popular myths that still prevail among those who are hesitant about warning systems including the belief that warnings generate panic or that false warnings greatly diminish the propensity of people to heed future warnings. Research, based on extensive observation of many natural and technological disasters, reveals that mass panic is highly unlikely when accurate information is provided. Rare false warnings do not seem to lead to a “Cry Wolf” syndrome. People want accurate and reliable information, and if the official sources do not provide it they will seek it from less reliable sources. We summarize in this document many lessons learned from this research in evaluating the warning process.

Another challenge in designing a uniform all-hazards warning system involves knowing what people must know in order to interrupt their normal activities to heed a warning and take appropriate action. We must recognize that warning is a continuous process that peaks during rare crisis events. Warning requires education and training, it often involves moving from very sketchy information over time to increasingly specific information. People at risk must participate in this progression in order to understand the imminence, severity, and likelihood of experiencing a hazardous situation. People rarely respond effectively to a last minute, “out of the blue” alert to take action unless they can directly perceive the threat.

Given that warnings are issued for many types of hazards, warning recipients are far more likely to quickly assess what is happening and determine what to do if the same terminology to describe risk and suggested action is used in these very different situations. Thus, a unified, all-hazard, public warning system must adopt a standard terminology for hazard warnings.

We also recommend the implementation of a unified, all-hazard, public warning message protocol, so that industry can modify existing hardware and build new hardware to receive warnings. It appears quite feasible to add such capabilities to objects such as telephones,

televisions, or radios that are purchased and used daily for other reasons. The rapid increase in use of Internet, Internet Protocol and wireless communication devices opens many powerful possibilities. With a standard message protocol and a reliable stream of messages, industry can evaluate the market potential and use its originality and competitiveness to produce all types of warning delivery systems.

In summary, we strongly recommend the implementation of an all-hazards public warning system that:

- Is cognizant of the social science research in the area of human response to warnings
- Incorporates training for populations at risk and the emergency managers who must mobilize a response
- Is based on a standard terminology for expressing risk and appropriate responses
- Utilizes a standard protocol for warning issuance.

We are confident that such a warning system is a major step toward enhanced public safety for a variety of natural and technological hazards in which timely response and appropriate action are critical.

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