July 5, 2002

Governor Tom Ridge
Director, Office of Homeland Security
The White House
Washington, DC

Dear Governor Ridge,

The Partnership for Public Warning convened a workshop in response to your deadlines for developing the Homeland Security Advisory System (HSAS). Twenty-nine of this nation's top experts in risk and warning communication met for four days (June 19-23) to review the HSAS and develop specific recommendations to support the Federal Government's Homeland Security effort.

The HSAS is a commendable first step to address a problem unthinkable before September 11. In its current form it is the threat assessment portion of a warning system, but it is not a complete warning system. The workshop participants unanimously suggest the following actions to improve HSAS as a threat assessment system:

1. Develop clear standards for deciding on changes in threat condition and for reviewing suggested changes. Have these standards reviewed by experts in the Administration and private sector. Publicize the existence of such standards. Build credibility for the process.
2. Base the threat-level scale on the probability/imminence of a terrorist attack. Do not include potential gravity or risk. If the risk is not high, express this information separately.
3. Develop ways to be more specific about what is likely to happen, where, when, over what time period and how likely it is. Be clear about the risks and the actions required to reduce the risks. People are unlikely to take actions that expend their limited resources without credible, specific information.
4. Consider changing the name of HSAS to accurately describe it as a threat assessment system and indicate that the advisory (warning) system is being developed.

Further, if you want significant action to be taken in response to changing the threat condition, we recommend the following in order to improve HSAS as a warning system:
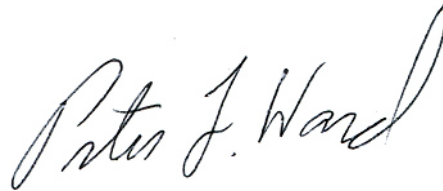
5. Recognize that effective warning is an ongoing evolutionary process that involves consistent use of terminology, thoughtful planning, training, and meaningful public education. The need for an ongoing long-term commitment and continual reevaluation and quality improvement is shown clearly by decades of experience in developing warning systems to prevent/reduce a variety of natural and social problems.
6. Move towards development of a national, all-hazards warning system. Americans must respond to more natural hazards and accidents each year than to acts of terrorism.

      Unifying the terminology and approach will provide better response to warnings about terrorism.

7. Use the power of existing emergency response plans, practices and procedures to engage State and local governments in the development and use of the HSAS. Emergency response to disasters (including warnings) usually starts at the local "incident" level. The state's role is to supply resource requests from local government. The federal role is to back up state response.
8. Recognize that actions taken outside the federal government will be based in part on actions taken by the federal government, because the federal government is the primary source of information on terrorism.

Effective warning is a complex process, but one with which this nation has a great deal of experience and expertise. The workshop participants are confident that decades of knowledge can be utilized effectively to reduce the impact of terrorism, and stand ready to assist in that endeavor.

Sincerely,

Dr. Peter L. Ward
Chair, Board of Trustees
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The Partnership for Public Warning was incorporated in January 2002 as a 501(c)3 public/ private non-profit institute as recommended in 2000 by the National Science and Technology Council. 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 soon by FEMA as a Utilized Federal Advisory Committee, providing a formal basis for federal employees to work with all the other stake- holders of warning systems toward resolution of national standards, protocols and priorities. Our vision of the future is that most people at immediate risk from natural or manmade disasters 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 will reduce their losses. We anticipate that most dissemination systems will have been developed by private industry as successful business ventures and that receivers will be included in many different types of consumer electronics devices that can self-activate in times of crisis.

Improving the Effectiveness of the Homeland Security Advisory System

A Report by
The Workshop on Effective Hazard Warnings

Convened by
The Partnership for Public Warning
7515 Colshire Drive, M/S NO22
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July 4, 2002

Background

On March 18, 2002, the Department of Justice published the Homeland Security Advisory System (HSAS) in the Federal Register and requested public comment on or before April 25, 2002. The Partnership for Public Warning, in its role of bringing together representatives of all the stakeholders in warning systems nationwide, submitted written comment reviewed widely by social scientists and others experienced in issuing warnings and in evaluating their effectiveness. In this process, it became clear that convening a workshop of such experts would be of great value before the final version of the HSAS is presented to the President by July 25, 2002. With financial assistance from the Federal Emergency Management Agency, the National Science Foundation, the National Weather Service and the U.S. Geological Survey, 29 experts met at the National Emergency Training Center in Emmitsburg, MD, June 19-23. This group included experts from the social sciences, physical sciences, communications technologies, emergency management, and federal law enforcement terrorism specialists. The result was a broad discussion of how to improve warnings for a wide range of hazards and a detailed review of the HSAS. This report summarizes the consensus reached regarding the HSAS.

Participants

Dr. Chris Adams, CIRA, Colorado State University, Fort Collins, CO

Doug Allport, President, Allport Group, Ottawa, Canada

Dr. Ben Aguirre, Disaster Research Center, University of Delaware, Dover, DE

Darrell Ernst, Lead Defense Space Systems Engineer, MITRE Corporation, McLean, VA

Kevin Foust, Federal Bureau of Investigation, Washington, DC

Craig Fugate, Director, Division of Emergency Management, Tallahassee, FL

Dr. Jim Goltz, California Office of Emergency Services, Pasadena, CA

Captain Eliot Grollman, Federal Protective Service, Chair WMD Committee for the Metropolitan Washington Council of Governments, Washington, DC

Dr. Eve Gruntfest, Geographer, University of Colorado, Colorado Springs, CO

Jim Hammill, Executive Director, Homeland Defense, Government Liaison & Special Projects, Telcordia Technologies, Red Bank, NJ

Dr. Michael Lindell, Hazard Reduction & Recovery Center, Texas A&M, College Station, TX

Dr. Rocky Lopes, American Red Cross National Headquarters, Falls Church, VA

Frank Lucia, Federal Communications Commission, Emergency Alert System, Retired, Frederick, MD

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Sarah Nathe, Special Assistant to the Vice Provost-Academic Planning & Facilities, University of California, Berkeley, CA

Constance Perett, Administrator, Los Angeles County Office of Emergency Management, Los Angeles, CA

Dr. John R. Powers, Chairman, CCRI Concepts, Alexandria, VA, former Executive Director of the President's Commission on Critical Infrastructure Protection

Timothy Putprush, Emergency Alert Service Primary Entry Point Coordinator, Federal Emergency Management Agency, Berryville, VA

Deborah Riopelle, Center for Public Health & Disaster Relief, University of California, Los Angeles, CA

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Ben Rotholtz, General Manager, Products and Systems, RealNetworks, Seattle, WA

Richard Rudman, Director of Engineering, KFWB Radio, Los Angeles, retired and former Chair, Emergency Alert System National Advisory Committee to the FCC, Los Angeles, CA

Dr. Robert Tilling, Volcanologist, U.S. Geological Survey, Menlo Park, CA

Dr. Peter Ward, Chair, Board of Trustees, Partnership for Public Warning, McLean, VA and Jackson, WY

Dr. William Waugh, Department of Public Administration and Urban Studies, Georgia State University, Atlanta, GA.

Eric Weinstein, Program Manager, Office of Nuclear Security and Incident Response, Nuclear Regulatory Commission, Rockville, MD

Dr. Dennis Wenger, National Science Foundation, Arlington, VA
Don Wernly, Chief Performance and Awareness Division, Office of Climate, Water, and
Weather Services, National Weather Service, Silver Spring, MD

The views expressed by these participants are based on their professional experience and do not necessarily represent the views of their employers.

The Purpose of the HSAS

As stated in the Federal Register (March 18, 2002, Volume 67, Number 52, Page 12047-12049):

> The purpose of the Homeland Security Advisory System is to provide a comprehensive and effective means to disseminate information regarding the risk of terrorist acts to Federal, State, and local authorities, and to the American people. The HSAS is intended to create a common vocabulary, context, and structure for an ongoing national discussion with Federal, State and local authorities, private sector industries, and the people of the United States about the nature of the threats that confront the homeland and the appropriate measures that should be taken in response. It seeks to inform and facilitate decisions appropriate to different levels of government and to private citizens at home and at work. …… The assignment of a Threat Condition shall prompt the implementation of an appropriate set of Protective Measures. Protective Measures are the specific steps an organization shall take to reduce its vulnerability or increase its ability to respond during a period of heightened alert.

The HSAS specifies five relative levels of risk (Low, Guarded, Elevated, High and Severe) (Green, Blue, Yellow, Orange, and Red, respectively) into which those assessing risk must fit all available information and from which those receiving information are expected to derive all appropriate actions to be taken.

Communication of the relative risk of terrorist attack based on classified information is an important national need and the HSAS is a commendable first step. However the HSAS, as currently formulated, will only lead to the most general protective measures. Ways need to be developed to provide more specific information in a credible, ongoing process before decision makers will decide to commit significant resources to preparedness. This is not a new problem. There is much to be learned from experience with wartime concerns and with natural and technological hazards over the past 60 years.

Lessons from Decades of Experience with Similar Issues

Beginning in World War II, the government has supported research on how people respond to disaster warnings. Since 1963, when the Disaster Research Center was funded at Ohio State University, hundreds of millions of dollars of research has supported research at universities, national laboratories, and institutes to determine how people respond to disaster and how warnings can be used to improve that response. In the 1970s, when scientists discovered physical precursors to earthquakes, complicated questions arose such as:
1. How do you tell people that a devastating earthquake is likely when you are only 1% certain?
2. What if you told them and the earthquake did not occur but considerable damage resulted

from the warning?

3. What if you did not tell them anything, the earthquake occurred, people died, and it was shown later that you had information that could have saved those lives?

Similar issues have been addressed, and in many cases resolved, in anticipating severe weather, floods, volcanic eruptions, and other natural hazards, as well as emergencies at nuclear power facilities. These complex concerns also arise in today's debate on terrorism warnings, but they are not new.

Some of the lessons learned from confronting such issues that are relevant to the HSAS include:

1. Effective warning is an ongoing process that involves planning, training, and a sequence of increasingly specific information.

2. Whether elected, appointed, or de facto, leaders need to weigh the costs of action versus non-action before spending significant resources on protective measures. Decision makers need specifics.

3. Provide information frequently even if there is a significant degree of uncertainty, being careful to indicate the degree of uncertainty. Withholding information, either because of uncertainty or concerns about "panic" (which is commonly anticipated by authorities but almost never occurs) is counterproductive. If authorities do not provide information, people will seek it from other—usually less reliable—sources.

4. Build credibility and understanding that the warnings are based on the best available professional practice. Develop credible, articulate authorities to explain the process consistently.

5. Actions are triggered by changes in threat condition. Develop an objective and codified process for frequently evaluating the need for changing the threat condition. The longer we stay at a given threat condition, the less effect the HSAS will have.

6. Construct warning messages that are specific about the nature of the threat and the protective actions that are recommended by authorities. One of the major incentives is personal protection from the hazard. Determine how to describe the hazard so that the message motivates the impulse to self-protection.

7. Warning messages should use terminology that is consistent across time for a given hazard and, to the greatest extent possible, should be compatible with the terminology that is used for other hazards.

8. Provide training about the hazard and protective actions if those at risk must respond to situations with which they are unfamiliar. Be aware, however, that most people will not spend very much time and effort learning about a hazard before an emergency occurs.

9. Recognize that no single source has complete credibility regarding all aspects of the threat and protective actions. Identify procedures by which different sources can ensure that their messages are compatible.

10. Disaster warning, losses, and response are primarily local issues. The state's role is to back up local government. The federal role is to back up state and local government.

11. Realize that warning systems are dynamic, requiring continuing evaluation and quality improvement as the knowledge base of the disaster threat and its management grows.

Similarities Between Warnings for Terrorism and Natural Hazards

At first blush, the criminal act of terrorism seems quite different from accidents or natural hazards such as severe storms, earthquakes, or volcanic eruptions. But from the perspective of

emergency management they are quite similar. We do not prepare for and recover from terrorism; we prepare for and recover from the hazards caused by criminal terrorist activity. Many of these hazards are similar to hazards from accidents with nuclear, chemical, or biological material at critical facilities or along our transportation corridors. The methods for mitigating the destructive effects of a fire, toxic release, or explosion are the same regardless of their root cause and therefore the warning process which empowers our emergency management system to take action should also be similar across all these hazards.

Warning systems for terrorism differ from those for natural hazards in some minor ways. For instance, terrorists might react to warnings or might probe the warning system. This adds an element of uncertainty to terrorist warnings but warnings of natural hazards also contain significant uncertainties. A second difference is that information on which a warning of a potential attack by terrorists is based may not be able to be made available for public understanding if this would compromise the sources. However, the scientific basis for natural hazards warnings is also difficult for the public to comprehend and there are still ways to make the warnings credible even if the basic data are not available or understandable. A third difference is that the scene of an act of terrorism is often designated a crime scene, complicating recovery; however, this does not affect the warning process. Therefore, the lessons learned from the nation's experiences with warnings for natural disasters and accidents should be directly applicable to reducing the risks posed by terrorism.

The Greatest Benefit of the HSAS Is Endorsing Best Practice

People respond best to warnings when they already have a plan. The effectiveness of disaster response has been documented over and over, in after-action reports for many emergencies of many different kinds, to be related to the quality of planning, preparedness, and training that was done prior to the emergency. It is simply the best professional practice for the government, business, families and others to conduct a regional threat assessment, draw up plans for coping with the hazards expected from their assessment, and for preparing and training all responders, and for exercising the plans on a regular basis. In the crush of day-to-day reality, such planning and training tends to be overlooked. Perhaps the greatest benefit of the HSAS in its current form is to increase the urgency people feel to make and exercise plans. However, to accomplish this, the HSAS warnings must contain more specific instructions on possible actions that people can take to reduce to reduce the risks mentioned in the warnings. For instance, the American Red Cross has developed an impressive list of actions (http://www.redcross.org/services/disaster/beprepared/hsas.html) and we understand that these actions will be included in the final report to the President regarding implementation of the HSAS.

Managing the Use of Limited Resources for Protective Measures

Any leader in government, business, or the family, whether elected, appointed, or simply de facto, has the primary responsibility for managing limited resources. This responsibility cannot be delegated to intelligence experts whose experience and responsibility is to set the threat condition. The intelligence experts may exercise best professional practice, but preparing for a potential disaster, increasing security, deploying emergency personnel, and hardening facilities all expend resources. For warnings to be effective and to lead to appropriate action, leaders need

information on which to base their decisions to spend limited resources. They deal with conflicting needs every day. They typically would like to know:

      1. What is likely to happen
      2. Where is it likely to happen
      3. Over what time period is it likely to happen
      4. How likely is it to happen
      5. What are the likely effects (risk)

They can then decide what actions they can take to reduce the risks to people in their jurisdiction and can weigh the relative costs of action versus inaction. They will also want to know what action is recommended and who is taking such action. The HSAS does not provide such information and therefore will not lead directly to significant new but costly action. It may increase the urgency but will not motivate decision makers to act.

The HSAS does relate to readiness. Local emergency managers, police, firefighters, EMTs are deployed in a state of readiness and are dealing with emergency conditions every day. For them to go to a higher state of readiness involves expending limited resources, canceling leave, increasing overtime, hiring more personnel. Without knowledge of a specific threat, a specific length of time for increased readiness, and the basis for the threat, they find that the HSAS will be of little practical use.

Increasing Specificity Is Fundamental to Effective Warning

For the HSAS to have the desired effect, it must communicate more specific information. While terrorists might react to the specifics, those at risk will not react appropriately without the specifics. Many major natural disasters evolve over time. The public has learned to listen to nonspecific information and then to respond as the specifics begin to show that their risk is increasing. For example, at first a hurricane is observed off Africa, then it moves into the Caribbean, and begins zeroing in on Florida. Finally, when landfall is predicted at a certain time, people begin boarding up windows and considering evacuation. Warnings of a terrorist threat may begin in a similar manner. When the types of targets are specified, and a time window is given, those responsible for managing facilities at risk can begin to take specific action. But actions will be limited if the time frame is long or unspecified or the targets are vague. Those responsible for issuing terrorism assessments must recognize that warning is a process. Each step builds the basis for taking a more specific and more costly step. Decision makers should be involved step by step. Time and again when dealing with natural hazards, we have come to realize that the public will make the right decision with adequate information, but without adequate information, adaptive actions are less likely.

Taking Action Depends on the Credibility of the Process

Social scientists find that responses to warnings of disaster tend to follow these steps:

      1. Perceiving the warning (hear, see, feel)
      2. Understanding the warning
      3. Believing that the warning is real and that the contents are accurate
      4. Confirming the warning from other sources or people
      5. Personalizing the warning
      6. Deciding on a course of action

7. Acting on that decision

Research shows that believing the warning and confirming the warning depend heavily on the credibility of the sources. For the HSAS and subsequent warning information to be believed and accepted, people must perceive that choice of threat level is based on professional best practice. Since the process of assigning the threat condition is primarily in the classified world, we need to find ways to communicate how the process works so that people can understand the professionalism involved. The HSAS correctly states that assignment of level depends on qualitative assessment. People need to trust those making the assessment, but since the Attorney General, who is responsible for assigning the threat condition, is a political appointee, some may dismiss the whole exercise as politically motivated, which will undermine the critical need to protect the nation from terrorism. In many cases it has helped to develop credible, apolitical personalities that the public gets to know and respect. Moreover, it should be assumed that warning messages will be shared among officials, agencies, nongovernmental organizations, and the public. Therefore, it is critical that there be consistency among the warnings so that credibility will be maintained

Establish Credibility with a Codified Process for Changing Threat Condition

The most important part of the HSAS is the decision to move the level up or down. These are the events meant to trigger action or reduce it. To increase the credibility of these warnings there needs to be a codified process for making the decisions and for releasing the warnings. The criteria for increasing or reducing the threat level is unstated in the HSAS and it is imperative that these criteria be explicit to motivate the population at risk to take action. There also needs to be a clear statement about how often the possibility of change will be addressed.

While a change in level may start with the work of one analyst, people must understand that there is a procedure involving a rigorous review by many professionals. It helps if there is some codification of each step in the process and that these steps have been worked out in advance by involving the most experienced people available. Such codification also protects the people making the decisions. Experience shows that the most scrupulously objective scientists may lose their objectivity in evaluating data that suggests a major disaster might occur that will kill large numbers of people. This was the reason for creating state and national review committees for earthquake predictions. The potential for extensive losses can cloud the evaluation of just how good the data really are.

This need for an objective and codified process is even more urgent for the HSAS. While the content of meetings to set the HSAS levels must be secret when discussing classified information concerning terrorism, the members of the committee can be known and this partial openness can help increase the credibility of the warnings. Finally, once a warning has been declared it must be released in a manner that separates it from unofficial leaks and further enhances its authority. We suggest that all warnings be released by a specific individual and should be supported by a group of other officials. For instance, after the Attorney General decides to issue a warning, the heads of the FBI, CIA, and any inter-agency warning evaluation team could issue separate statements supporting the importance of the warning. It may be additionally useful for a committee of government and non-government specialists with required security clearances to

review the decision when time is available.

According to the HSAS, "the higher the Threat Condition, the greater the risk of a terrorist attack. Risk includes both the probability of an attack occurring and its potential gravity." This mechanism for changing threat levels is flawed not only by being vague, but also by combining the gravity of the threat and the probability of its occurrence into one scale. Clearly, these two factors can vary independently. For example, the response to a warning of an event of serious gravity but low probability is likely to be quite different from that for an event of high probability, no matter what the gravity. If variables are to be combined into a single scale, the rules for how they are combined must be clearly specified so that people expected to take action understand how the level was established. We recommend that the HSAS focus on the probability/imminence of a terrorist attack. Do not include potential gravity or risk. If the risk is not high, express this information separately.

Standard Terminology Is Critical for Understanding

The purpose of a warning is to communicate the threat and what to do about it quickly and efficiently. One technical word can communicate a great deal of information precisely. Specialists immediately understand all this information when the word is used. Similarly, standard terminology is critical in issuing warnings of disaster. This is why the National Weather Service spent years developing a sequence of terms that imply different amounts of specificity and risk:

1. **Warning:** The hazardous event is occurring or is imminent. The public should take immediate protective action.
2. **Advisory:** An event, which is occurring or is imminent, is less severe than for a warning. It may cause inconvenience, but is not expected to be life threatening or property threatening, if normal precautions are taken.
3. **Watch:** Conditions are favorable for occurrence (development or movement) of the hazard. The public should stay alert.
4. **Outlook:** The potential for a hazard exists, though the exact timing and severity is uncertain.
5. **Statement:** Detailed follow-up information to warnings, advisories, watches, and outlooks is provided.
6. **Forecast:** This is a prediction of what events are expected to occur. The range of predictability for hydro meteorological hazards extends from the short-term forecasts for one to two hours out to climatological forecasts for trends up to a year in advance.

Any specific hazard occurs only sporadically, so using a standard set of terminology will increase the effectiveness of our communications because the public will be exposed to the same terms at more frequent intervals. Such standard terminology is particularly important given our nation's highly mobile populace, which is exposed to different hazards and terminology as they move about the country.

Unfortunately, in its current form, the HSAS contradicts this standard terminology because its title labels it as an advisory scale and it is referred to in the documentation as a system to "provide warnings." However, given the vague nature of the current system it only achieves the status of an outlook in the National Weather Service terminology. One goal of the Partnership for

Public Warning is to develop a standard, all-hazard terminology for communicating hazard, risk, and appropriate actions to take. This workshop is the first step in that development. It is extremely important for the effectiveness of the HSAS that we establish a clearly understood sequence of words that communicates unequivocally what needs to be said.

Hazard and risk are two terms with specific meanings clouded in the definition of the HSAS. While the HSAS defines risk as "both the probability of an attack occurring and its potential gravity," risk has come to mean how much harm or loss is likely to occur or even how much an insurance company would have to pay. A bomb exploding in a remote location has much lower risk than the same bomb exploding in a city because more people would be killed and more property destroyed in the city. Terrorists typically pick targets of high risk in order to have maximum political impact. Hazard is the event that leads to loss.

Coordination with State and Local Governments

State and local governments will take most of the concrete actions to reduce the risks posed by terrorist threats. For this reason, it is critical to build links between the groups issuing HSAS warnings from the Federal Government and the emergency management and response parts of the state and local governments in order to increase the positive impact envisioned when the HSAS was created. We suggest that these relationships be formalized so that those closer to the American public know how they will receive information and what actions are being recommended. Local government officials also tend to have a high level of credibility with the public and involving them in the dissemination of the HSAS warnings will also help to increase the credibility and impact of the warnings.

An Evolving, Uniform All-Hazards Warning System

Many of the activities required to increase the effectiveness of the HSAS can also be applied to warnings for natural hazards. These include the use of standard terminology, the use of effective new communications technologies, and increased coordination across all levels of our government. Each hazard has unique aspects and to date the warning systems for them have not been unified. However, the workshop participants believe that this is now possible as well as beneficial. Therefore, we propose that the HSAS be brought forward as an interim system simultaneously with a proposal to develop a unified all-hazards warning system for the country. A uniform system is also an efficient use of government resources because it prevents duplication of efforts for different hazards. It allows agencies as well as the public to better prioritize their responses when confronted by multiple hazards such as terrorism and a tornado. The goals of the HSAS will be well served by joining with the natural hazards warning systems to provide the nation with a single system that can provide effective, credible warnings to the public.

Such warning systems must also continue to evolve with time as our knowledge about threats, mitigation methods, communications systems, and demographics constantly change. An important element of both the HSAS and any more general warning system is periodic review seeking opportunities for improvement. Making this part of the process will prevent these systems from becoming outdated and ineffective.

Recommendations

The HSAS is a commendable first step to address a problem unthinkable before September 11. In its current form it is the threat assessment portion of a warning system, but it is not a complete warning system. The workshop participants unanimously suggest the following actions to improve HSAS as a threat assessment system:

1. Develop clear standards for deciding on changes in threat condition and for reviewing suggested changes. Have these standards reviewed by experts in the Administration and private sector. Publicize the existence of such standards. Build credibility for the process.
2. Base the threat-level scale on the probability/imminence of a terrorist attack. Do not include potential gravity or risk. If the risk is not high, express this information separately.
3. Develop ways to be more specific about what is likely to happen, where, when, over what time period and how likely it is. Be clear about the risks and the actions required to reduce the risks. People are unlikely to take actions that expend their limited resources without credible, specific information.
4. Consider changing the name of HSAS to accurately describe it as a threat assessment system and indicate that the advisory (warning) system is being developed.

Further, if you want significant action to be taken in response to changing the threat condition, we recommend the following in order to improve HSAS as a warning system:

5. Recognize that effective warning is an ongoing evolutionary process that involves consistent use of terminology, thoughtful planning, training, and meaningful public education. The need for an ongoing long-term commitment and continual reevaluation and quality improvement is shown clearly by decades of experience in developing warning systems to prevent/reduce a variety of natural and social problems.
6. Move towards development of a national, all-hazards warning system. Americans must respond to more natural hazards and accidents each year than to acts of terrorism. Unifying the terminology and approach will provide better response to warnings about terrorism.
7. Use the power of existing emergency response plans, practices and procedures to engage State and local governments in the development and use of the HSAS. Emergency response to disasters (including warnings) usually starts at the local "incident" level. The state's role is to supply resource requests from local government. The federal role is to back up state response.
8. Recognize that actions taken outside the federal government will be based in part on actions taken by the federal government, because the federal government is the primary source of information on terrorism.

Effective warning is a complex process, but one with which this nation has a great deal of experience and expertise. The workshop participants are confident that decades of knowledge can be utilized effectively to reduce the impact of terrorism, and stand ready to assist in that endeavor.

Appendix 1: The Relationship Between the HSAS and EAS

The Partnership for Public Warning convened a separate group in a series of meetings, discussions and email exchanges lasting over a period of several weeks to recommend what relationship the HSAS should have to the Emergency Alert System (EAS), our national warning system, and to assess the capability of EAS to warn the populace of terrorist attacks when time is of the essence. The primary participants were:

> Kenneth Keane, Partner, Arter and Hadden, Washington, DC, lawyer experienced in wireless issues and in dealing with the Federal Communications Commission
>
> Frank Lucia, Federal Communications Commission, Emergency Alert System, Retired, Frederick, MD
>
> Timothy Putprush, Emergency Alert System Primary Entry Point Coordinator, Federal Emergency Management Agency, Berryville, VA
>
> Richard Rudman, Director of Engineering, KFWB Radio, Los Angeles, retired and former Chair, Emergency Alert System National Advisory Committee to the FCC, Los Angeles, CA, Vice Chair, California EAS State Emergency Communications Committee, Member, Society of Broadcast Engineers EAS and FCC Liaison Committees.
>
> Herbert White, National Weather Service, Silver Spring, MD

EAS operates at the national, state and local levels. EAS equipment is required at all radio and television stations and cable systems. EAS is currently authorized under Title 47 of the Code of Federal Regulations, Part 11 and is managed by the Federal Communications Commission Enforcement Bureau. The state and local levels of EAS operate as a voluntary program. FEMA manages the national level Presidential last-ditch warning component of EAS, the Primary Entry Point program (PEP). Emergency managers use National Weather Service dissemination systems as an entry point to relay emergency messages to local broadcasters and cable operators. NWS systems include an extensive VHF radio warning system, NOAA Weather Radio, and its satellite based NOAA Weather Wire Service and Emergency Managers Weather Information Network dissemination systems.

Group recommendations:

1. The only event related to the HSAS that would be appropriate to broadcast using the EAS protocols would be a change from the orange level to the red level when:
   a) Sufficient detail is known regarding the time, location, and nature of the threat or there is an unfolding act of terrorism
   b) The public in immediate danger must be told quickly to act or not to act in well-defined and planned ways
   c) The warning will not compromise details of national security
2. A terrorism warning could be issued using the existing code for civil danger warning (CDW), but CDW is an optional state and local code, not a mandatory federal code. Optional codes may not be implemented in some locales. There is no central federal warning center currently prepared to issue such state and local warnings.
3. Introduction into EAS of a specific code or codes for terrorism and specific language related to that code must be implemented through the Report and Order process at the FCC that would lead to reprogramming EAS encoder/decoders at every radio and television station and cable head end. This process typically takes years.

4. The current EAS has neither the means nor the mandate to warn the public when their radios or televisions are turned off. Off-the-shelf monitors are widely available to receive a warning and sound an alarm directly from EAS and NWR or through relay of warning messages from NWWS and EMWIN, even with the device muted. However, since the monitors are not a common fixture in every home, a time critical warning of terrorist attack in the middle of the night would reach only a very small percentage of the populace at risk.

Appendix 2: Examples of Threat-Level Scales In Current Use

1. Air Quality Index (http://www.epa.gov/airnow/aqibroch/aqi.html#2)
2. Asteroids: The Torino Scale (http://explorezone.com/space/sub/torino_scale.htm)
3. Computer Virus Threat Severity Scales
   a. Panda Software Risk Assessment Criteria (RAC) (http://www.pandasoftware.com/library/indice_en.htm)
   b. Symantec Security Response Threat Severity Assessment (http://securityresponse.symantec.com/avcenter/threat.severity.html#category)
4. Earthquake Richter scale (http://www.seismo.unr.edu/ftp/pub/louie/class/100/magnitude.html)
5. Fire-danger Classes (http://www.fs.fed.us/fire/planning/nist/wims_ug/appe.pdf)
6. Graphical Techniques For Depicting Threat Levels for Hazardous Weather (http://www.srh.noaa.gov/mlb/ghwopres00.htm)
7. National Defense Scales
   a. DEFCON: The DEFense CONdition threat scale determines the posture of the military to prepare for the likelihood of war (http://www.fas.org/nuke/guide/usa/c3i/defcon.htm)
   b. THREATCON: condition for defense of the United States homeland and assets abroad (http://www.stuffiveheard.com/tac/tacalerts.html)
8. Nuclear Reactor Event Threat-scales
   a. US Nuclear Regulatory Commission classification of events (http://www.nucleartourist.com/operation/e-plan.htm)
   b. International Nuclear Event Scale (INES) (http://www-news.iaea.org/news/inesmanual/ines2001.pdf)
9. Technical Surveillance Threat Levels (http://www.tscm.com/threatlvls.html)
10. Terrorism Threat Level for Natural Gas Facilities (http://www.texasgas.com/Security%20Measures.htm)
11. Tsunami Threat Scales (http://www.wsspc.org/tsunami/OR/Tsuanami_Procedures_Oregon-2001.pdf)
12. Volcano Threat scale
    a. Response Plan for Volcano Hazards in the Long Valley Caldera and Mono Craters Region, California (http://geopubs.wr.usgs.gov/bulletin/b2185/)
13. Weapons of Mass Destruction
    a. U.S. Customs Service Alert Levels (http://www.customs.ustreas.gov/news/sept11/alertstatus.htm)
    b. 4 level CONPLAN (http://www.fbi.gov/publications/conplan/conplan.pdf)
14. Wind Threat Scale (http://www.srh.noaa.gov/mlb/tcworkshop_2001/slide14.html)