



Deaf and Hard of Hearing Consumer Advocacy Network



Northern Virginia Resource Center
for Deaf and Hard of Hearing Persons

Emergency Preparedness and Emergency Communication Access

Lessons Learned Since 9/11 and Recommendations

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Emergency Preparedness and Emergency Communication Access

Lessons Learned Since 9/11 and Recommendations

EXECUTIVE SUMMARY

The events of September 11, 2001 and its aftermath exposed many glaring weaknesses in the emergency preparedness infrastructure that compromise the safety and security of 28 million Americans who are deaf, hard of hearing, late-deafened and deaf-blind. Experiences with emergencies during the past three years continue to reinforce the urgent need for these weaknesses to be addressed.

Top Priority: An Effective Emergency Communication System

America's current public warning and emergency communication systems get a failing grade from deaf, hard of hearing, late-deafened and deaf-blind individuals. There are too few effective options for communication and the options currently available have largely proved unreliable.

Hearing loss has a major impact on communication in emergencies because it is impossible to depend on auditory information. Sirens, shouted warnings, calls from rescue workers trying to locate people in rubble, knocks on doors to give urgent information, quick phone calls to give a heads-up about a developing situation, radios, public address systems – all can be useless. Captioning of television and Internet news and coverage for text messages is not a given. Without effective communication systems, deaf and hard of hearing individuals do not know that there is an emergency, cannot learn what steps must be taken to protect themselves and others, and have no access to critical resources in the aftermath of an emergency.

This report includes an extensive list of recommendations designed to increase the number and variety of communication options, ensure reliability, and build in redundancy. The recommendations will require widespread consumer collaboration with government agencies, legislators, broadcasters, manufacturers, program and service providers, product developers, telecommunications and Internet providers, public safety officials, and many other entities.

Developing an effective emergency communication system for individuals who are deaf and hard of hearing will help everyone. In an emergency, many people with no hearing loss have difficulty hearing. The combination of stress and noise such as high winds, explosions, shouts, or the roar of a fire can make it impossible to hear well.

Involvement and Integration in Activities

Other weaknesses identified in the nation's emergency planning make it imperative for quick action to ensure that individuals who are deaf, hard of hearing, late-deafened and deaf-blind are actively involved in community, regional, state, and federal emergency planning processes, equipment testing, disaster exercises, CERT trainings, Citizen Corps activities, training of public safety and security personnel, and other activities. The involvement of individuals who are deaf, hard of hearing, late-deafened and deaf-blind will tap into their tremendous talents and quickly help to increase understanding of their needs in a wide variety of areas.

Emergency planners are setting up systems across the U.S. that do not take into account the unique needs of individuals who are deaf, hard of hearing, late-deafened and deaf-blind. History has repeatedly shown that redesigning and adapting equipment, programs and services because these needs were not taken into account from the beginning is almost always more expensive and rarely as effective.

Additional recommendations in this report are intended to build a national network that will encourage participation and collaboration and provide the tools to help ensure its success. This network will offer technical assistance, research, education, training, planning, advice and consultation, and development of model programs and services. It will create a knowledge bank of the nation's best expertise to tackle a wide range of needs.

RECOMMENDATIONS

Emergency Communication Network

I. Television

A. Broadcasters

- Provide highly accurate realtime, verbatim captioning of all analog and digital TV news broadcasts, preferably open captioned with contrasting background to ensure readability for viewers with impaired vision.
- Have contracts in place for captioning services to provide caption transmission during emergencies at the same time as the audio information begins.
- Ensure transmission of cable or satellite broadcasts of emergency information with captions to local customers during emergencies.
- Establish dedicated telephone lines and redundant backup plans for transmission of captions if using offsite captioning providers, ensuring that transmission of captions will not be interrupted or lost.
- Ensure that equipment needed for captioning is connected to the backup power source.
- Ensure that important new emergency information is identified in some way, or is the only captioning onscreen.
- Ensure that sign language interpreters who are interpreting emergency-related information for public officials and emergency management staff are not cut off the screen during broadcasts.

B. Manufacturers

- Ensure that all analog and digital video output devices, such as TVs, monitors, receivers, video cards, battery operated televisions, tuners and video displays of any size, have caption capability.
- Ensure that battery-powered televisions of any size have caption capability.
- Place a clearly-designated button at the front of all televisions and on any remote control, to provide instant caption activation.
- Ensure that all televisions provide captions that appear immediately upon activation and immediately after channel changes.
- Build all video output devices with the ability to turn on automatically when crucial emergency information is being broadcast, and the capacity to connect to auxiliary alerting audio and visual alerting devices.

C. Federal Communications Commission

- Designate captioning providers as essential personnel in the context of emergency response.
- Provide vigorous and immediate investigation of complaints regarding access to visual presentation of emergency information accompanied by strong enforcement actions.
- Clarify or expand regulations on visual presentation of emergency information to include such examples as airport closings, new security measures, changes in homeland security threat levels, instructions on filing for disaster relief, where to get information on survivors, mental health services in aftermath of disasters, etc.
- Increase enforcement of regulations requiring that emergency captions not be blocked, that emergency captions do not block other captions, and that they are always passed through by cable and satellite providers.

- Require that where sign language interpretation is provided onscreen during emergencies that captioning of any kind should not block it.

D. Other

- Establish cooperative agreements among captioning providers to caption broadcasts in the event of emergencies regardless of the emergency's location.
- Provide continued federal government financial support to encourage the training and development of captioning professionals.
- Enforce the requirement that televisions in public places (e.g. airports, restaurants, hotel lobbies) have captions turned on at all times.
- Ensure that government agencies provide a qualified sign language interpreter for press conferences and that the interpreter is televised in close proximity with the public official who is speaking.

II. Text Devices (e.g. pagers, PDAs, cell phones, text radio, displays)

A. Infrastructure

- Ensure the allocation of sufficient spectrum for the provision of text information and messaging.
- Develop a national infrastructure of first responders, public safety answering points (PSAPs) and other key sources, which is able to transmit and receive emergency text messages, with backup systems in place.
- Develop a full Radio Data Service (RDS)/captioned radio system with the ability to send emergency text messages to radio and other displays.
- Mandate the transmission of text to radio displays in emergencies and that radios and displays have the capability to turn on automatically to display this information if it is off, with visual and 500 Hz auditory alerts to command attention to them.
- Develop a system of smart broadcasting of emergency messages, specific to the area an individual is located in, to mobile communication devices with location-finding (GPS or terrestrial) within that area, regardless of where the individual's account was set up.

B. Manufacturers/Service Providers

- Develop wider and more reliable coverage for wireless text devices.
- Build all devices with the ability to inform when a message has been read, along with time and date information.
- Develop interoperability of text messaging systems and cooperative agreements among providers so that in the event of an emergency there are numerous ways for individuals to send and receive crucial information.
- Provide consumer education on the limitations of wireless products and services.
- Build all text information and messaging devices with GPS or terrestrial location finding and the capability to easily register with PSAPs and other key sources of emergency information.
- Make all new vehicles available with displays having the ability to show Radio Data Services, receive emergency broadcasts, and generate visual and auditory alerts to the emergency; make aftermarket add-ons available for older vehicles.
- Build text devices with backlit displays and keys, adjustable font size, and compatibility with Braille and large print displays.
- Provide wide availability of user-friendly text messaging and information systems, such as easy battery replacement and simple steps to receive and send information.
- Ensure that emergency messages are not truncated and are formatted for the capabilities of a device.

- Develop OnStar and similar vehicle systems to be usable for emergency text messaging.
- Ensure that providers of WiFi services and other wireless Internet services participate in emergency management planning about communication access when access to information is needed for emergency purposes.

C. Transportation and Transportation System Information Sources

- Require that all audio announcements are broadcast with a simultaneous text display.
- Ensure that text displays in all public areas, e.g. highways (variable message signs), bus stations/buses, subway stops/cars, airports/planes, train stations/trains, provide thorough information on the nature of the emergency and instructions on what to do.
- Equip highways, weigh stations, and rest areas with TTYs and access to other text messaging devices (i.e. coverage for text pagers) to provide updates and access to emergency information and assistance.

D. Government

- Collaborate with text messaging companies to establish systems sending out local emergency messages to text devices.
- Encourage development and distribution of free, simple wireless text devices and service options for emergency information.
- Use the Amber Alert communication model for emergency information dissemination.
- Provide tax incentives to wireless service providers to give discounted products and services for people who are deaf and hard of hearing.
- Ensure that emergency management officials provide programs to inform local deaf and hard of hearing individuals about setup, operation, and how to connect auxiliary devices to weather radios.
- Ensure that state and local emergency management planning organizations broadcast text information about regional emergencies to local weather radios with text display capabilities.
- Complete the coverage of National Weather Radio across the U.S. and provide needed equipment for text weather radios to provide information equal to those provided by voice.

E. Federal Communications Commission

- Enforce Section 255 regulations to ensure wide availability of text options for deaf and hard of hearing individuals who have impaired vision and manual dexterity.

III. Telecommunications and Telecommunications Relay Services (TRS)

A. TRS Providers

- Require the ability to place emergency calls 24/7 via in all new and emerging TRS technology – VRS, IP, CapTel.
- Require all TRS providers to have backup power ready to operate for a minimum of 72 hours.
- Require all TRS providers to have contingency plans for transfer of calls from TRS centers that may be unable to operate due to catastrophic damage or overwhelming volume of calls from other centers.
- Ensure that all TRS personnel are deemed essential personnel during emergencies.
- Enable all TRS providers to access a reliable national database to connect consumers with the appropriate PSAP in an emergency.
- Require that the national database be updated frequently.

- Direct Internet-based relay services to quickly develop location identification and 9-1-1 access so that these services can be used for 9-1-1 anywhere in the U.S.

B. Manufacturers/Service Providers

- Resolve interference issues between cell phones and digital hearing aids, cochlear implants and/or TTYs expeditiously and phase in solutions.
- Build TTYs, amplified telephones and other specialized equipment with longer battery life and/or ability to use off-the-shelf batteries.
- Ensure that all specialized telecommunications devices for deaf, hard of hearing, late-deafened and deaf-blind individuals are easily able to communicate with PSAPs and emergency personnel.
- Ensure that text telephone and messaging communication are treated at the same level of priority as voice communication, e.g. garbling of calls is not permitted, or turning off text to permit voice only in IP networks.
- Resolve firewall issues with WiFi to permit easy VRS operation.
- Give TRS “dial tone” priority for restoration in the event that they are made inoperable during an emergency.
- Ensure that landline telephone service is operational and effective to support regular phone and TTY use as well as dial-up and DSL connections; provide backups to needed areas.
- Collaborate with PSAPs to modify equipment and software platforms for complete access and compatibility with the most current technologies to receive and send messages in emergencies.

C. Public Safety Answering Points (PSAPs)

- Ensure the ability of equipment and competency of staff to handle non-traditional calls, e.g. CapTel, Voice Carry Over (VCO), IP-Relay, and Video Relay.
- Develop partnerships with deaf, hard of hearing, late-deafened and deaf-blind consumers to better understand each others’ needs and gain confidence in ability to communicate during emergencies.

D. Government

- Provide federal support for all states to distribute the most effective accessible technology available (TTYs, computers, pagers, weather radios, etc.) to widest range of qualified recipients for ease of access to available community services and resources, including relay services, 911 centers and emergency shelters.

E. Federal Communications Commission

- Require that all wireless telephones are compatible with hearing aids and cochlear implants.

IV. Internet

A. News Providers

- Provide highly accurate realtime, verbatim captioning of all live video streaming of news.

B. Telecommunications Providers

- Ensure that a secure system is in place to prevent interruptions in use of Internet Protocol (IP) and Video Relay Service (VRS) during emergencies.

- Ensure that VoIP features needed for use by deaf, hard of hearing, late-deafened and deaf-blind individuals remain operable and effective.

C. Software Providers

Require that pop-up alerting software have the ability to be prioritized to allow emergency messages to override user settings and pass through, while others are blocked or passed through per user settings.

Building a National Network

Establish a national network to offer technical assistance, research, education, training, planning, advice and consultation, and development of model programs and services such as:

- Addressing emergency communication gaps and emergency notification at the state and local levels.
- Develop a plan and provide technical assistance to ensure that individuals who are deaf, hard of hearing, late-deafened and deaf-blind are actively involved in community, regional, state, and federal emergency planning processes, equipment testing, disaster exercises, CERT trainings, Citizen Corps activities, and other activities.
- Providing education and training to the deaf, hard of hearing, late-deafened, and deaf-blind individuals, emergency planning personnel, the general public, and others.
- Developing a plan for programs to provide a culturally and linguistically appropriate mental health counseling/support network for individuals who are deaf and hard of hearing after disasters.
- Developing an American Sign Language lexicon for emergency preparedness and homeland security signs.
- Educating the public about the challenges inherent in the buddy system when used for deaf and hard of hearing individuals.
- Working with professional organizations to develop certification of individuals installing sound systems and quality standards for public address systems.
- Developing a plan for establishment of a national Support Service Provider program to train individuals to provide assistance to deaf-blind individuals in emergencies.
- Advising federal and state legislators on options for subsidies or distribution programs to assist deaf, hard of hearing, late-deafened and deaf-blind consumers in purchasing assistive technology and backup power sources related to communication needs during emergencies and power outages.
- Advising appropriate entities regarding changes to building codes to require accessible alarm systems with battery backups in private homes.
- Working on a national program to develop standard color or code systems for multiple lights in public buildings.
- Serving as a national center to provide technical assistance to manufacturers and service industries to research, test and develop new and existing equipment and technology for accessible emergency communication, and to ensure that any future technology is accessible.
- Advising on pilot programs to state and local communities for startup of accessible communication systems.
- Providing consultation and support on disability sections in CERT training modules so that disabilities such as deafness and hearing loss are included in teaching and discussion of each particular topic.

- Developing model plans for Involving deaf and hard of hearing individuals in emergency drills as participants or “victims”.
- Developing best practices for accessible mass inoculation sites for bioterrorism via captioning on videos, sign language interpreters, assistive listening systems, and other considerations.
- Establishing a program to train security staff on procedures that are appropriate and effective for deaf and hard of hearing individuals.
- Providing broad public education on the need for emergency planning to include arrangements for deaf and hard of hearing visitors, clients, attendees, etc.

Emergency Preparedness and Emergency Communication Access

Lessons Learned Since 9/11

INTRODUCTION

"According to the American Red Cross, there are 65,000 disasters a year. People with disabilities have an enormous stake in the state of preparedness for these disruptions of everyday life. Moreover, all Americans live in the antechamber of disability brought on by these disasters; anyone can join the disability community in a moment as was so dramatically demonstrated on September 11th."

-- Task Force on Emergency Preparedness and People with Disabilities
report to Office of Homeland Security

Twenty eight million Americans have some kind of hearing loss. That number continues to rise as the baby boom generation ages. Hearing loss has a major impact on communication in emergencies because depending on auditory information becomes impossible. Sirens, shouted warnings, calls from rescue workers trying to locate people in rubble, knocks on doors to give urgent information, quick phone calls to give a heads-up about a developing situation – all can be useless.

Hearing loss can happen at any age, and its causes are numerous, including heredity, disease, ototoxic drugs, injury and exposure to noise.¹ Sixty percent of Americans who are deaf or hard of hearing are between the ages of 21 and 65.² A very large number of them are parents, caretakers, supervisors, teachers, or in other positions where they have great responsibility for the safety of others. This makes it absolutely imperative that their needs be taken into account in emergency planning, homeland security decisions, and development of public education and preparedness programs at the national, state, regional and local levels.

Emergency planners are setting up systems across the U.S. that do not take into account the unique needs of individuals who are deaf, hard of hearing, late-deafened and deaf-blind. History has repeatedly shown that redesigning and adapting equipment, programs and services without taking these needs into account is almost always more expensive and rarely as effective.

Throughout this report we use the term “deaf and hard of hearing” to encompass a very diverse group of Americans. They may be individuals who were born deaf or hard of hearing, became deaf after they had developed a spoken language base (late-deafened), or became hard of hearing at any age. They communicate through American Sign Language, speechreading, use of assistive technology³, cued

¹ An article in the *TIME* April 5, 2004 issue on the dangers of noise reported that more than 10 million Americans have permanent noise-induced hearing loss and that one in eight children between the ages of 6 and 19 already have some degree of hearing loss.¹ According to the National Institute of Occupational Safety and Health, 30 million other individuals are exposed daily to noise levels that will eventually reduce their ability to hear. And Dr. James Battey, the Director of the National Institute on Deafness and Other Communication Disorders, said “The greatest increase [in noise-related hearing loss] occurs for people aged 45-64 years old...almost 20 years younger than we would expect.”

² Self Help for Hard of Hearing People, www.shhh.org

³ Hearing loss is not corrected as easily as eyesight is corrected by glasses and contact lenses. Hearing aids and cochlear implants are valuable tools, but they cannot replace the healthy ear's hair cell function and its complex interaction with the brain. Thus hearing aids and cochlear implants do not perform well in the presence of noise such as fans from heating and cooling systems. They also cannot distinguish a specific voice in the presence of other sounds. An individual with hearing loss in both ears cannot determine the direction a noise is coming from unless both ears have appropriate devices to provide

speech, and many other options. They may be deaf-blind or have other disabilities such as mobility impairments.

Developing an effective emergency communication system for individuals who are deaf and hard of hearing will help everyone. In an emergency, many people with no hearing loss have difficulty hearing. The combination of stress and noise such as high winds, explosions, screams, or the roaring of a fire can make it impossible to hear well.

The Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN) has worked closely with the Northern Virginia Resource Center for Deaf and Hard of Hearing Persons (NVRC) to make this report possible. It is the hope of DHHCAN and NVRC that this report will increase understanding of the needs of individuals who are deaf and hard of hearing in emergency and disaster situations and foster strong government, business and citizen partnerships leading to immediate solutions for the crucial needs identified.

Gathering Information

DHHCAN,⁴ a coalition of 16 national nonprofit organizations of, by, and for deaf, hard of hearing, late-deafened and deaf-blind persons began to receive numerous reports following the tragic events of September 11, 2001 from its member organizations. These reports indicated that widespread difficulties were experienced by deaf and hard of hearing individuals across the nation on September 11 and during the weeks that followed. DHHCAN's Project Access was launched in October 2001 with these goals:

- Qualify and quantify the problems encountered by deaf and hard of hearing persons
- Ascertain the extent of the problems

A series of nationwide press releases by DHHCAN and its member organizations requested that individuals share their experiences to assist in this endeavor. Many of their accounts are included in this report to offer a sample of experiences and problems encountered.

By April 2003, DHHCAN had become increasingly concerned by the lack of information about steps being taken to address the needs of individuals who are deaf and hard of hearing in homeland security and emergency preparedness endeavors. A second survey was conducted to gather information in these areas:

- Efforts made in locations such as their workplaces, schools, communities and states, attempts by deaf and hard of hearing individuals to assist in developing emergency communication systems, and the result of these efforts
- Suggestions about what the ideal system to communicate vital information in emergencies should look like, and how it might be accomplished

enough sound information. Increasing the volume of sound has limited value; making something louder does not necessarily make it clearer.

⁴ DHHCAN member organizations include: American Association of the Deaf-Blind, American Deafness and Rehabilitation Association, Association of Late-Deafened Adults, American Society for Deaf Children, Conference of Educational Administrators of Schools and Programs for the Deaf, Communication Service for the Deaf, Deaf Seniors of America, Gallaudet University, Gallaudet University Alumni Association, National Association of the Deaf, National Black Deaf Advocates, National Catholic Office of the Deaf, Registry of Interpreters for the Deaf, Telecommunications for the Deaf, Inc., USA Deaf Sports Federation, and The Caption Center/WGBH.

While the first Project Access survey regarding experiences on September 11 brought a deluge of responses, the few responses to the second survey were sobering. This second survey found that only a few isolated attempts had been made across the U.S. to meet the needs of deaf and hard of hearing individuals and that there was little or no sharing of information about them or coordination of efforts.

On a regional level, the Northern Virginia Resource Center for Deaf and Hard of Hearing Persons (NVRC)⁵ joined the Northern Virginia Community Resilience Project⁶ to conduct a survey in late 2003 and early 2004 in the metropolitan area of Northern Virginia, Washington, D.C. and Maryland. This metropolitan area, which had experienced an anthrax outbreak, the Fall 2002 sniper shootings, and a number of weather-related emergencies such as devastation by Hurricane Isabel in Fall 2003, was also keenly aware of its status as a prime target for terrorists.

The survey's goal was to gather more detailed information from deaf, hard of hearing, late-deafened, and deaf-blind individuals about:

- How they learned about the September 11 terrorist attacks
- Where they were and when they heard about the September 11 attacks.
- What communication breakdowns they experienced on September 11
- Whether they felt they had the same access to emergency information as the hearing community
- How they would like to be informed of an emergency, if given a choice
- Which of the ways of receiving emergency information they would most like to see improved

These surveys, coupled with information gleaned from numerous meetings, articles, presentations, correspondences, media accounts, and interviews, led to DHHCAN's development of a list of recommendations included in this report.

Top Priority: Accessible and Effective Communication

The importance of developing reliable and effective communication options equal to those of hearing people was underscored in survey after survey and personal account after personal account. Many of the problems identified are the same as those faced by the general public, but they are amplified by the difficulties deaf and hard of hearing individuals face in communication because they can rarely depend on auditory information.

Top priority must be given to the need for effective communication of information to individuals who are deaf and hard of hearing. Without the knowledge that there is an emergency or potential emergency, and information about what to do to ensure their safety and protect their property, other efforts may well be meaningless.

In an emergency situation, a deaf and hard of hearing individual, like any other individual, must have many options for communication. If one option proves ineffective or unworkable in conveying emergency information, emergency personnel should be prepared with readily available and accessible communication alternatives.

⁵ NVRC is a nonprofit organization serving the metropolitan area of Northern Virginia, with the mission of empowering deaf and hard of hearing persons and their families through education, advocacy and community involvement.

⁶ The Northern Virginia Community Resilience project, funded by a FEMA grant, had two staff (Cathy Friedlander, M.S.W. and Alicia Healy, M.A., N.C.C.) hired to work specifically with the deaf, hard of hearing, late-deafened and deaf-blind communities. They provided services from June 2002 to late 2003.

The Northern Virginia Community Resilience Project issued a final report by its two staff who were specifically designated to assist deaf, hard of hearing, late-deafened and deaf-blind individuals. They wrote that upon employment they were eager to start providing counseling and education, but they quickly learned that a more pressing concern of the individuals with whom they worked was how they would be notified in emergencies. “Being informed of breaking news and latest developments seemed to be a way for the Deaf Community to feel more in control and ‘resilient’,” they stated.

Moreover, throughout their work, these two staff said they became accustomed to a phenomenon. “Individual or group discussions would veer away from the intended topic onto the more pressing concern: communication access during an emergency,” their report said.

SEPTEMBER 11, 2001 AND COMMUNICATION TECHNOLOGY

In times of crisis and emergency, Americans have typically turned to three forms of technology for their information: radio, television and telephone. For deaf and hard of hearing individuals, all three sources proved unworkable or unreliable. On September 11, two of the newer technologies brought some of the most striking success stories: wireless pagers/PDAs and the Internet.

Television

Television was the area most often cited in accounts by deaf and hard of hearing persons and in subsequent surveys and personal accounts. No matter how they happened to learn of the terrorist attacks, most of them turned to a television for more information as soon as one was available.

National network and cable news coverage with closed captioning was outstanding when taking into consideration the problems faced in providing both the coverage and the captions. The nation's largest cities often had experience in meeting captioning-related regulations for providing local news with realtime closed captioning.⁷ In these areas, local news coverage with captions proved very helpful.

- ***Caption Error Rate***

The captioning error rate, most likely due to the long hours required of the captioners, was much higher than usual on September 11 and in the days that followed. Immediately after the attack on the World Trade Center, one captioner doing realtime work by remote connection continued for almost nine straight hours. The captioner feared that if she hung up her phone she would be unable to get back her connection and leave the news program's audience without captions.

- ***Loss of Captioned Coverage***

A very large number of accounts received by Project Access were concerns about the loss of captions on news programs and inconsistencies in captioned news coverage.

Individuals indicated that local television stations across the U.S. apparently interpreted the regulations requiring the visual presentation of emergency information to apply largely to situations dealing with adverse weather conditions. As a result, key information such as airport closings and new security requirements, tightened security on major transportation routes, what to do if anthrax exposure is suspected, and other important news were not captioned.

⁷ The Television Decoder Circuitry Act of 1990 regulations (47 CFR Section 15.119) require all television broadcast receivers with screens 13 inches or larger diagonally, manufactured or imported after July 1, 1993, to have the capability to receive and display closed captions. The decoder chip is required for digital television receivers with picture screens 7.8 inches or larger vertically and all separately sold DTV tuners (47 CFR Section 15.122).

FCC regulations, which went into effect on August 29, 2000, require "visual presentation" of emergency information (47 CFR Section 79.2). All news programming about emergencies must be visually accessible at the time they are exhibited on television. These requirements, written in pre-9/11 days, are intended to provide all crucial information in an emergency, including how to respond to the emergency.

The FCC also oversees the Telecommunications Act of 1996 regulations (Section 713) that phase in closed captioning of television programs by 2006. These regulations, however, do not require 100% of captioning of all programs. The emergency access provisions at 47 CFR 79.2 were intended to fill the gap.

Emergency Alert System (EAS) rules are spelled out in 47 CFR Section 11.1. Broadcast systems are required to transmit national EAS messages, as are wireless and cable systems serving 5,000 or more subscribers. State and local EAS participation is voluntary.

- National news programs continued to provide bulletins and updates in the days after September 11, but their captioning began to disappear. "ABC, CBS, NBC and MSNBC aren't even bothering to caption their programs now that the initial shock of the event is done," wrote a late-deafened resident of California as the week wore on. "This is leaving many of us in the dark once again."

- A resident of Illinois who is deaf learned about the World Trade Center attack through an interpreter at her workplace. "All of us turned on NBC and saw the terror in the skies...luckily the captioning was working and I was able to have full access to the tragedy.

"Unfortunately, the next day, to my surprise and disappointment, NBC, ABC and CBS had no live or open captioning. All I could see was pictures of terror, pain, crashes, emergency people carrying out bodies, etc. I kept asking my co-workers every two or three minutes, "What is being said? What is that? What is happening?"

- "My biggest beef after the September 11th attack was that my local and cable news had their closed captions blocking the local feeder,"⁸ said one deaf individual. "I was not able to get any local news for days. I have written to all three major networks (local) and my request fell on deaf ears. For the first couple of days they were good about keeping the closed captioning away from the local feeder, but after that, forget it."

- ***Inconsistency in Captioning***

Individuals who are deaf and hard of hearing reported that, in different parts of the country, the captions on national broadcasts were sometimes missing.

- One late-deafened individual who was channel surfing for information found that CNN had rolling text updates of the news. These updates scrolled across the bottom of the screen from right to left while captions of what was being said on the CNN program were displayed in the upper part of the screen. However, when an independent TV station displaying the same captions suddenly started to roll its own locally produced text updates across the bottom of the screen, the CNN captions stopped.

- In contrast, a deaf woman who was at home in Connecticut and watching TV when the first of the twin towers was hit fared better. "I was watching CNN, which I feel aired the best closed captioned coverage of all. Closed captioning was on the screen 24/7, and I also found the major networks – ABC, CBS and NBC -- to provide constant and superior coverage," she said. "I have been told by friends in New York that this was not true for many of them."

- KAKE-TV, the local ABC affiliate in Wichita, Kansas ran a blue band across the bottom third of the TV screen with its logo. Other information was put on the right side of the screen, and graphics like an American flag were on the left. This left only a small box to view local and national news, thus blocking closed captioning, including ABC's national coverage. A deaf viewer sent e-mail to the news department and

⁸ A proliferation of forms of captioning has occurred in recent years. Line 21 is reserved for closed captioning, which is not visible unless it has been activated. Emergency Alerting System (EAS) captions are intended to be seen by all viewers. Individual television stations and networks have also developed greater ability to have scrolling text and captions at various places on the screen. In spite of FCC requirements that these forms of captioning not interfere with each other (47 CFR Section 79.2), reports by deaf and hard of hearing individuals confirm that they do.

general manager expressing her concern about the loss of captioning. She received a reply chastising her for sending this e-mail, saying that when the station was working under difficult conditions, "TV stations and the networks are doing their best under 'war' conditions. You, of all people, should be understanding. Instead, we see the 'selfish' portion of human nature come forward."

- An Arlington, Virginia resident wrote, "I was watching the Pentagon go up in flames one block away from my home, and since there were no captions on national TV for a while, I didn't have a clue what was happening."

- This experience was echoed by another woman living 15 miles away. "During the minutes and hours after the September 11 attacks, I found national news coverage with captions. Most of it was about the World Trade Center. I was very anxious to learn more about the Pentagon, where many of my neighbors and friends work. The one local station providing most of the coverage on the Pentagon was the last to get captions, hours later."

- A Tulsa, Oklahoma resident reported that in the beginning of news coverage, the local ABC station blocked the national captioning feed whenever they "squeezed the screen to the corner" for local news. A proactive advocate, she knew how to contact the head of programming at the station by pager, and he had the problem fixed in about 30 minutes.

- ***Too Much of a Good Thing***

Television captioning takes many forms. There are closed captions, which are visible only to those who have turned on the built-in decoder chip, and open captions, which are visible to all program viewers. Captioned words can appear in different colors with or without a contrasting background panel to help them be more readable. Captions can scroll from one side of the screen to the other, scroll up with each new line replacing one of the older ones, or pop onto the screen.

As broadcasters have become more adept in using captions as visual tools, they may have several sets of captions appearing on the screen at once. During September 11 and the days that followed, this created a problem for viewers who were totally dependent on captions for their information. They reported that they were often unable to determine which captions were providing new and important information.

- ***Hearing People Benefit From Captions Too***

Pamela Holmes, who chaired the U.S. Access Board at the time of the September 11 attacks, depends on captions for her television viewing. She first saw pictures of the World Trade Center attacks on two televisions without captions as she was in the hotel lounge grabbing some coffee on the way to an Access Board meeting. She watched live as the second plane crashed into the World Trade Center, not understanding what was happening. She decided to proceed to her meeting in the hotel as planned.

As Access Board staff arrived at the meeting, they described to her what had happened via sign language interpreters. Holmes learned that the Pentagon had just been hit and the White House, located five blocks away, was evacuated. Several federal members including those from the Department of Justice and Department of Defense, left quickly to check on staff back at the office. A meeting break was announced.

Wanting to learn more, Holmes headed to a television in a nearby food court, and later checked a television in the hotel lobby. She found that the lounge televisions had no built-in decoder. The televisions in the food court and lobby had no remote controls or menu buttons on the set to turn on the decoder. She was joined in her quest for captions by hearing people who also were eager to see them because the area was so noisy they couldn't hear what was being said.

- ***Few Options for Battery-Powered Televisions***

Most battery-operated television sets selected for emergency use during power failures have screens smaller than 13 inches diagonally. These televisions are not required to have decoder chips that make closed captions viewable.

Certain manufacturers have chosen to include this technology in some of their smaller TVs, but individuals who are deaf and hard of hearing report it has been difficult to find these models because manufacturers rarely advertise the captioning capability. As a result, most deaf and hard of hearing people who cannot understand auditory information are unable to access televised emergency information in the event of power outages.

- ***The Coming of Digital TV***

Of a growing concern is the nation's shift to digital television, which has been mandated by the FCC. Programming providers are required to transition their digital broadcasts to include captioning in a digital format, and digital televisions are required to have the circuitry to display it. Random tests in 2003 and 2004, however, show that not all digital televisions have the required captioning chip, and that a large number of broadcasters are not meeting their digital captioning obligations.

Many consumers also do not realize that free-standing flat screen and plasma monitors without tuners are not required to have the captioning chip.

- ***Post-September 11 Experiences***

A nine-month survey in 1999 and 2000 of deaf and hard of hearing residents in Minnesota and Oklahoma by Vincent T. Wood and Robert A. Weisman found that 81% of respondents had experienced a fear of being unprepared for weather emergencies. "This fear was attributed to several factors, but mainly to poor information dissemination that included inadequate captioning of routine and emergency weather reports in particular," the authors wrote.

This fear has continued throughout the U.S. in other emergencies. The NVRC/Community Resilience regional survey in 2003-2004 asked individuals who were deaf and hard of hearing which of the ways of receiving emergency information they would most like to see improved. Television captioning was the most frequent response. Wrote one respondent; "I would like station managers to spend a day with the sound off on their televisions to see how they fare."

Cable users who have The Weather Channel as one of the programs available can benefit from its realtime captioning, which has been available since 1999. Local news programs far are less reliable. There are still widespread reports from across the U.S. that emergency information is not being provided or crucial information is being omitted.

Despite FCC regulations that require visual presentation of emergency information and several reminders of their obligation, broadcasters have not given this information the priority it deserves. Information may be provided visually several minutes after it has been spoken by a newscaster, if at all. It may provide some, but not all crucial information needed to protect life, health, safety or property. In four years since the rule went into effect, despite numerous complaints to the FCC, and reminders to broadcasters of their obligations, no broadcaster has yet been fined.

Most broadcasters do not have an on-site captioner for their programs. It is imperative for these broadcasters to ensure that they have backup plans in place for caption coverage. One deaf individual learned that during an emergency the captions were not broadcast because her local TV station, operating on backup power, had not thought to plug the captioning equipment into it.

- ***Open vs. Closed Captioning, Realtime vs. Pre-Scripted***

Although open captioning of television programs that would be visible to all viewers is not required, its use has many advantages. Few manufacturers have placed a convenient button on the front of their television sets or on the television's remote control to instantly activate or deactivate closed captions. There may be several layers of menus to go through before captions can be viewed, and a television may reset to non-captioning mode whenever it is turned off.

Some television models are also slow to display captions. After being activated, it may take a couple of seconds for the captions to begin showing up. There may also be a delay each time a channel is changed.

In an emergency open captions can save precious seconds that are lost to activating the captions. They have the added advantage of being readily available to people who have temporary hearing loss due to illness, are in noisy surroundings, are not familiar with the operation of the television set, or do not remember how to activate the captions.

Deaf and hard of hearing individuals also have been extremely vocal about their dissatisfaction with pre-scripted captions used on many news programs. Regulations do not require realtime captions, which are meant to provide word-for-word text of everything that is spoken, except in the country's top 25 markets. News programs using pre-scripted captions typically provide only some of the information and captions are often not synchronized with what viewers see on the screen. No information or very sketchy details are usually provided for breaking news and on-the-spot coverage from other locations – the very things most desired in preparing for emergencies, during emergencies, and following emergencies. Without word-for-word accounts, the context of information or crucial details may be lost.

The visual information provided during emergencies also may be confusing and frustrating, and meaningless. Not every individual knows how to read a Doppler map. Without additional information, deaf and hard of hearing visitors in an unfamiliar region look at a map with the outlines of cities and counties – but no names to identify them – and don't even know for sure if they are in harm's way.

Telephone

Some individuals with hearing loss can communicate using regular telephones. For many individuals who are deaf and hearing, however, specialized telecommunications equipment is

required. Recent years have brought exciting new options to make telecommunications easier for deaf and hard of hearing persons.

A concern is that amplified telephones, TTYs⁹ and alerting equipment -- such as loud audible ring signalers or bright visual ring signalers that indicate incoming calls -- are usually dependent on the availability of electricity, and thus useless during power failures. Another drawback is that the expense of this specialized equipment -- which is significantly higher than off-the-shelf equipment used by hearing persons, prevents large numbers of deaf and hard of hearing people from being able to afford a second piece of equipment to be kept charged up (if battery powered) or for use as a backup.

TTY Users and Emergency Response System

Some TTY users report that they do not have confidence in their local emergency response system. This lack of confidence stems from their own experiences or they have heard from others, whose calls to 911 centers and other emergency locations were not answered on September 11 or in the past.

Wireless Phones

Deaf and hard of hearing individuals whose cell phones had analog service, some of whom use cell phones with TTYs, were able to make phone calls on September 11 when cells were available. Digital cell phones are still not routinely compatible with hearing aids and cochlear implants, and analog service is now being phased out.¹⁰

In New York City, many people were not able to use their digital wireless phones by voice due to network overloads, but the data network held up despite the demand. It is noteworthy that SMS messages can be a very efficient use of data capabilities; in many cases no connection to the Internet is required until the message is actually sent or received.

Telecommunications Relay Services

Telecommunications Relay Services (TRS)¹¹ are services intended to be provided by telephone companies 24 hours a day, 7 days a week to facilitate telephone communications between people who have hearing or speech disabilities and people who may or may not have these disabilities. Telecommunications Relay Services are provided through a third-party operator at no extra cost to callers.

On September 11, telephone lines were tied up, particularly in New York City and the D.C. metropolitan areas, due to the system overload. TRS users had additional challenges.

⁹ TTYs are devices that look like small typewriters, with keyboards and an acoustic coupler. A user types his or her conversation and sends it across telephone lines to another TTY or a computer using compatible software.

¹⁰ Regulations for Hearing Aid Compatibility with telephones are spelled out in 47 CFR Section 68.4 (a). Many digital wireless phones cause interference when used by those who wear hearing aids or have cochlear implants, making them extremely difficult or impossible to use. The FCC has agreed to allow service providers to phase out analog wireless service. In addition, on July 10, 2003, the FCC modified the exemption of wireless phones under the Hearing Aid Compatibility Act of 1988. Wireless phone manufacturers and phone service providers must have at least two hearing aid compatible handsets to offer with reduced radio frequency (RF) emissions for each air interface. The exception is Tier I wireless carriers, who must either do the same or have _ of their total handset models in compliance, whichever yields a greater number of handsets. Other requirements are also spelled out.

¹¹ Telecommunications Relay Service are required under Title IV of the Americans with Disabilities Act.

- Kelby Brick of Maryland reported that on September 11 his wife was unable to complete any TRS calls all morning, although she could make TTY-to-TTY calls without any problem. This created a very stressful situation, as she and her husband were unable to communicate with their child's school to make arrangements to pick up their child. This situation occurred because the Governor of Maryland shut down all state offices, including the TRS office, on September 11, and because there was no back-up plan for operating TRS.
- A deaf woman working in the building next to the World Trade Center was not able to reach her hearing mother in Long Island through TRS. This woman ended up sending an e-mail to ask her brother to pass on a message to her mother.
- TRS providers were unprepared for the volume of calls that were made, as a result of the breakdown of TRS communication in several states. It appears that none of the nation's TRS providers had clear procedures in place to inform communities about the disruption in relay services, nor were their personnel classified as essential for times of emergency.
- At the Deaf Seniors of America conference in Minneapolis, hundreds of deaf senior citizens were stranded by the shutdown of airports. Sprint arranged to waive all TRS long distance charges so the seniors could make calls during the week to their loved ones without worrying about the cost.
- One deaf woman trying to call colleagues via TTY from her hotel room in Washington, DC was frustrated in all her attempts. The telephone service did not have a feature called "TTY intercept" service, so the message "all circuits are busy at this time" was only voiced, and did not appear in text on her TTY.
- Individuals who use Video Relay Services,¹² which allow them to communicate visually by using American Sign Language, also experienced difficulty. Three states (North Carolina, Texas, and Washington) offered TRS service at this time, and few people could access it. Some Video Relay Services were operating only on limited hours and in fixed locations.

Additional Concerns

In the years since September 11, deaf and hard of hearing individuals have enjoyed the introduction of a number of new technologies and the expansion of others. It is now possible to make TRS calls through the Internet by using wireless text devices and computers via Internet Protocol (IP) relay services. A proprietary relay service called CapTel uses specialized phones, hardware, speech recognition software, and TRS operators trained to use the software to revoice words, enabling a CapTel user to both hear and receive the text of what the other person is saying over a single phone line. In addition, Video Relay Services are now available across the U.S.

¹² Since 9/11, Video Relay Service has experienced strong growth, with 6 companies now providing the service across the U.S. A relatively new service, it currently can be used only by those with high-speed cable or Internet connections, and new features are still under development. Long-term reimbursement for costs of the service have not yet been determined, but no costs beyond those for a normal call between two hearing persons have been passed on to those using the service. In addition, WiFi network video firewalls have been known to block their use.

This proliferation of new technology makes calling much easier and more efficient for deaf and hard of hearing individuals, but it creates new challenges for emergency communication. Most of the technology depends on electricity. In addition, using these TRS options to call 9-1-1 centers employing enhanced features means that the phone number of the relay call center appears at the Public Safety Answering Point (PSAP) instead of the number for the caller's location that would appear when calls are dialed directly to 9-1-1. Thus any information in the PSAP database for that location will not be instantly available. PSAPs are also not familiar with many of these newer TRS technologies.

TRS call centers are required to have databases so that they can quickly route these emergency calls to the appropriate center. Their accuracy, however, depends on these databases being kept current.

The FCC's action in August 2003 to require some wireless telephones to be hearing aid compatible will make this communication much more widely available to people who are deaf and hard of hearing. At the same time, the rapid transition to Internet telephony through Voice Over Internet Protocol (VOIP) raises new concerns about whether this technology will be accessible to individuals who are deaf and hard of hearing or become another barrier to communication.

Internet

The Internet, because of the text-based nature of its earlier years, has been widely used by deaf and hard of hearing individuals. Those who had access to the Internet during September 11 made great use of it to find news and communicate with friends, family, and neighbors through e-mail, SMS (short message service) or instant messaging systems. Some websites and Internet service providers such as America Online had ongoing text information of breaking news and updates. Unfortunately, although live broadcasts were available through streaming video on the Internet, they were not captioned.

During the past two years, more deaf and hard of hearing people report they are using the Internet to get some of their news. Video information continues to be a barrier because of the lack of captioning to make audio information accessible. Some organizations and government agencies are leading the way; the Federal Communications Commission, for example, captions live webcasts of its meetings.

In late 2003, America Online began offering CNN "quick casts" at specific times each day consisting of short news updates with both video streaming and captioning. Individuals who are deaf and hard of hearing have expressed hope that other Internet news providers would follow this example.

Wireless Pagers and PDAs

Pagers often turned out to be a welcome and reliable source of communication on September 11 for deaf and hard of hearing individuals who were within a good coverage area. Sometimes the messages were delayed by the unusually high demands on the network.

- A deaf individual who worked in a government office in Washington, D.C. with 100 hearing people said that because of his pager he was the first to know of the attacks on the World Trade Center and alerted the others. The pager worked better than cell

phones immediately after the attacks. However, an hour or two later the pager stopped working for several hours.

- Susan Zupnik, a systems designer for the Port Authority of New York and New Jersey, and Carl Andreasen, another deaf employee, escaped from a cafeteria on the 43rd floor of the North Tower. The impact of the first plane crash threw Susan against a window. Although she heard nothing, she could see debris falling outside the window and people screaming inside the building. She learned what had happened by sending a page to a friend on an AOL Mobile Communicator she had purchased months earlier. She reports that as she made her way down the stairs to get out of the building, her pager vibrated constantly with messages from friends all over the world -- California, Maryland, Ireland, South Africa, and England -- asking if she was safe.

- An Oklahoma resident who is deaf was due to fly out of town on September 11. She was working alone at her office when people began to page her and told her to turn on her television. "Without them, I would have been stranded at the airport," she said.

- The assistant principal of a high school in New York City learned of the World Trade Center attacks through an interpreter signing what the secretary was speaking. As the events of the day unfolded, the phone lines were down, the television in the conference room did not have captioning, and co-workers were getting information from radio broadcasts that this woman could not because of her hearing loss.

She said "My friends and colleagues tried to contact loved ones via cell phones. Those lines were either congested or not working. My pager kept me in touch with my family, friends, and breaking news. Additionally, my deaf friend, working six blocks from the WTC, was able to contact my husband, via pager, to find him after he walked across the Brooklyn Bridge to safety...I was able to let friends across the country know we were all right...Our phones at work were out for days; my phone lines at home worked sporadically at best. Without my pager I would have been dead in the water."

- Angela Kessler was on the 24th floor of the building next to the World Trade Center when a co-worker screamed for her to get out of the building, saying 'explosion, explosion', running to the window, and gesturing to get her to understand. As Angela ran from the building, she realized she had left her pager and purse, and ran back for them. Later she was able to use the pager to find her husband, Mike, who had bought his pager just one week before.

Building on the Success

A number of alerting and information services transmit text information in emergencies. Individuals who are deaf or hard of hearing are taking increasing advantage of them to receive messages on their computers, pagers, PDAs, and cell phones.

Some local TV stations transmit e-mail news bulletins of breaking news. The Weather Channel also has a service with weather information.

The Emergency Email and Wireless Network also provides weather information; information about local emergencies can also be provided, but only if the local emergency response team signs up with the system. These messages may serve as more of an informational resource because they are sometimes received after an emergency. They also may be truncated and not contain the full message, although users can sign up for short messages

for their cell phone and e-mail address. This network can broadcast information of a national scope: on 9/11, it sent out a message that all U.S. airports had been shut down.

The Amber Alert legislation passed by Congress in 2003 may offer some resources, but its full capabilities are not yet known.

In Israel, the Home Front Command has addressed the challenge of emergency alerts by distributing thousands of free pagers to residents who are deaf or hard of hearing. The pagers vibrate and send a message with instructions on the screen when a siren is activated to warn Israelis to a missile attack.

Here in America, Oklahoma established a program called OK-WARN that provides hazardous weather information from the National Weather Service to alphanumeric pagers.¹³ Federal government agencies are also taking advantage of wireless alerting capabilities. The US Army distributed vibrating pagers to deaf and hard of hearing employees at one of its posts in Maryland, with a message system that enables them to receive emergency information whether they are in their workplace or at another location on the post. The Library of Congress also has an emergency pager system for its deaf and hard of hearing employees.

One problem that has not yet been licked is that of emergencies that happen when a deaf or hard of hearing individual is traveling outside the coverage or away from the geographic area issuing the alerts. A hard of hearing individual who subscribed to the Emergency Email service said: "It's good when I'm in my office or at home, since they're both located in the same county, but much of the time I am working in and traveling among many different cities and counties and I don't have a clue what emergencies might be happening there."

"There is an OnStar system in one of my family's vehicles," she continued. "It has the potential to provide me with information and assistance, but I can't use it because it's all audio and I need text. It would be great if that could be adapted to provide a display of emergency information."¹⁴

Deaf and hard of hearing individuals are as mobile as other people. The NVRC/Community Resilience survey found that of those who were government workers in the DC metropolitan area, 27% were not at work on September 11 when the first plane hit the World Trade Center. Among the reasons were being on leave, en route to work, at remote locations, at meetings, and attending to medical needs.

An Unmet Need: Access to PSAPs

With car radios and cell telephones useless to many individuals who are deaf or hard of hearing, these text devices are often the only option to send and receive emergency information. Some service plans by wireless vendors who market specifically to deaf and hard of hearing people offer the feature of 24-hour AAA roadside assistance service, which is very popular. Yet in numerous surveys, discussions, and correspondence from individuals who are deaf or hard of hearing since September 11, a frequent concern is the

¹³ OK-WARN was established through a federal grant to the Oklahoma Department of Emergency Management and expanded a pilot program started in 2001.

¹⁴ General Motors has just announced TTY capabilities for its OnStar system.

lack of access to Public Safety Answering Points (PSAPs) via these wireless text devices. This service is currently offered in only Sacramento, California.¹⁵

Emergency responders have expressed reluctance to offer this service for a number of reasons, many tied to their concern that it would be unreliable and that device users would not know whether their message succeeded in reaching the PSAP. Deaf and hard of hearing individuals, however, have said that in the absence of any other alternative they are willing to accept the risk.

Drawbacks of Wireless Text Devices

In surveys and conversations with individuals who are deaf and hard of hearing, have found that some will not use the devices, and others cannot afford the costs associated with them. In addition to the purchase of these devices, individuals must pay the monthly wireless subscription charge, and in some cases the batteries required to operate the device. Some subscription plans charge by the amount of text sent or received each month, or both.

Another drawback is that some individuals find pagers too complex to use or lack the manual dexterity or vision required to use their small keys.

Deaf and hard of hearing individuals also may not hear the audible alert when a page is received, or they do not want to always have the pagers attached to their clothing so they can be alerted in the “vibrate” mode. This is true not just when they are sleeping but during their waking hours. Not all pagers vibrate. Some alert to an incoming page through a flashing light on the screen or elsewhere on the pager. Without the ability to know when an incoming message arrives, the pager’s usefulness in emergencies is negated.

Those who use pagers are not always aware of limitations in pager coverage. They also do not always understand that just because they have sent a message, it doesn’t mean that it has been received.

Radio

During September 11, large numbers of individuals who are deaf and those who are severely hard of hearing found it impossible to understand a radio even when used in a quiet setting. Yet radio is an important communication technology of last resort when there is a power failure.

In many emergencies, people are told to turn on their radios to receive more information. During Hurricane Isabel in September 2003, one Virginia newspaper printed a list of shelter sites in the area with this rejoinder “Residents are asked to wait until the city announces on local radio stations that shelters are open before heading to them.”¹⁶

Building an Accessible System

For decades before September 11, individuals who are deaf and hard of hearing spoke of the desire for text radio to have access to news. At present, there is little that a deaf or hard of hearing person can do to communicate while in transit – phones, e-mail, radio and TV are either unavailable or unusable. One reason often cited in the desire for text radio is to be

¹⁵ Sacramento’s two-way pager service is staffed 24/7 by a dispatcher in the Sacramento Police Department who immediately enters a call for service, and if necessary, contacts an allied agency or other emergency services personnel.

¹⁶ “Shelter Sites”, *Fredericksburg Free-Lance Star*, September 18, 2003.

able to get information while driving, particularly in situations where there are traffic delays or emergency road closings and detours.

Surveys and correspondence since September 11 have shown an increasingly strong desire by deaf and hard of hearing individuals for widespread deployment of text radio. The vision of text radio in a personal vehicle would have the radio turn on when an emergency message is being broadcast. A display would show the complete text of the audio report. Through a global positioning system or terrestrial location finding in the vehicle, broadcasts of an emergency nature for the area in which the occupant is traveling would automatically be routed to the vehicle.

Captioning a radio broadcast can be done just as it is done for television. The British Broadcasting Corporation (BBC) is now making a scrolling text service for the latest headline news to those who have digital radio, with content refreshed every 20 seconds, 24 hours a day.¹⁷

Already Radio Data System (RDS) allows text information to be sent over an FM radio signal. It is currently used in the U.S. to display the station's call letters, the name of a song being played, weather reports, stock quotes, sports scores, and other information. The technology was the subject of a *New York Times* article in January 2004,¹⁸ Clear Channel Communications, Entercom, Infinity Broadcasting, Cumulus Media and some smaller broadcasters have RDS capability at some of their stations. Also mentioned is that the technology is widely used in Europe to provide traffic information. The Toyota Prius and some other vehicles have screens that can display RDS.

The National Oceanic and Atmospheric Administration (NOAA) National Weather Radio (NWR) service made major strides when a local office in Salt Lake City, Utah first tested special NWR receivers that converted audio messages to text. In 1999, a "special needs" weather radio receiver with Specific Area Message Encoding (SAME) was released.

Some manufacturers have made weather radio receivers available with special output connectors. These can be used for add-on devices needed to alert individuals who are deaf and hard of hearing such as a pillow vibrator, bed shaker, and visual strobe light. The alerting attachments, however, may not be battery operated. The devices and add-on features also add a great deal to the price. The basic receiver is approximately \$50 to \$80 and the systems packaged with external alarm devices start at \$100. It's possible to connect the system with one that's already available, but it requires electronic skills.

NWR not only provides information about severe weather, but has also begun to be used for other hazardous conditions. It does not yet have coverage for all areas of the U.S. Deaf and hard of hearing individuals who use the text feature have also cited an additional drawback: the text broadcasts do not contain all the information being provided in the audio broadcasts. It is ironic that NWR information is generated by text but was developed for audio use; thus it lacks the capacity to transmit the full text.

Public Address Systems

¹⁷ This service is available on Digital Audio Broadcasting and is a partnership between BBC and Unique Interactive.

¹⁸ "More radio stations get the word out," *New York Times*, January 19, 2004.

Text equivalents are rarely available for announcements on address systems in public places and vehicles or facilities for public transportation. Even people who do not have a hearing loss often make complaints about the poor intelligibility of public address systems. Self Help for Hard of Hearing People (SHHH)¹⁹ noted in comments to the Office of Safety and Health Administration:²⁰

“At the Audio Engineering Society Show held October 2003 in New York several people commented on how no one could understand the announcements made at the World Trade Center on 9/11/01 because the speech was unintelligible. Lives were lost and will continue to be lost if emergency announcements are not understandable.”

SHHH also pointed out that people who install sound systems are not required to be certified, and the result is that the quality of public address systems is not standardized. Without visual information to learn quickly what is going on and what they need to do, individuals with hearing loss could be placed in danger to themselves and to co-workers who attempt to rescue them.

Signal Systems

Deaf and hard of hearing individuals tend to need highly visual systems; an audible-only system using sirens or other loud sounds will not be successful. One hard of hearing individual who lives in the umbrella zone of the Surrey, Virginia nuclear power plant wrote:

“The local siren is about a block away from my home. I listen to it quite often and wonder if it is a test or emergency. I must remember to have the radio on (battery back-up) and try to hear a special announcement to find out if it is a test while the ear-piercing siren wails away.”

Although no comments were received and only rarely were signal systems addressed in accounts of September 11, their importance in emergencies merits attention.

Unlike the visual alarm systems used in hotels, commercial locations, education facilities, and public buildings, there are few systems available for personal residential use. A smoke alarm with a strobe light strong enough to alert a person with severe to profound hearing loss costs around \$150 or more, while regular smoke detectors for people who can hear them are available off the shelf from \$5 - \$20.

For true protection visual smoke detectors must be hard-wired into a whole-building system and placed throughout all the rooms. A visual alarm in one room cannot be seen in an adjoining room if the door between them is closed, unlike the way an audible alarm can be heard in a room distant from where it was placed. Deaf and hard of hearing people often report that in public buildings, areas such as restrooms have often been overlooked when installing visual alarms. Visual alarms also need to have battery backups to operate during power failures.

Using these visual systems also has pitfalls. For example, Gallaudet University cannot use its current visual alert system to warn of emergencies where students should shelter in place because the students have learned that if the lights start to flash they should evacuate the

¹⁹ Self Help for Hard of Hearing People is a national nonprofit organization with a mission to open the world of communication for people with hearing loss through information, education, advocacy and support.

²⁰ Letter to Thomas K. Marple, Director of Office of Federal Agency Programs, US Department of Labor, October 21, 2003.

building. Adding a light with another color could be used to inform students to stay in the building, but the students would still need to know if they should go to the top of the building, basement, or elsewhere.

Transportation and Other Public Message Displays

Transportation message displays onboard transit systems, in stations, along roadways, and in other locations are becoming more common. These displays can be a good source of information during emergencies.

It is important that such variable message displays on highways carry as much information as possible; giving a phone number to call or a radio station to tune in to is useless to many deaf and hard of hearing persons.

Print Media

By their nature, newspapers are unable to provide crucial information in a timely fashion. They did, however, have an important role on September 11 in providing additional, more extensive information and analysis. Surveys of deaf and hard of hearing individuals have shown that newspapers were a valuable resource in other post-9/11 preparations for potential emergencies, coping with actual emergency situations, and dealing with the aftermath.

Other Experiences

AIR TRAVEL

The delays, confusion, and uncertainty created by heightened air travel security concerns were keenly felt by deaf and hard of hearing individuals during September 11 and its aftermath. They reacted with the same patience and understanding as the general public. However, they encountered many new hardships and some frightening situations.

- Mohammed Fadl, a deaf man teaching sign language in Chicago, was stopped by security personnel while walking with a friend through the Cleveland Airport on September 18. Security personnel thought, because he and his friend were Middle Eastern and signing to each other, that they were communicating in code. He was interrogated and released several hours later, but he and his friend missed their plane.
- A man from Kuwait who is deaf and studying sign language in Halifax, Canada was on an Air Canada flight bound for Montreal in early October 2001. He used the bathroom at the rear of the plane before takeoff. When he tried to communicate with flight attendants by using sign language, the flight attendants got scared because they did not know how to tell him to sit back in his seat and fasten his seat belt. Their fear communicated to the passengers, who did not want to fly with him, and resulted in his being ordered off the plane.
- A Northwest Airlines plane flying from Bradley Airport, Connecticut to St. Paul-Minneapolis on September 11 had five deaf passengers on their way to the Deaf Seniors of America Conference. The plane began to drop lower and lower, and eventually was forced to land at Sawyer International Airport in upper Michigan. The deaf passengers were unaware of the messages over the intercom from the pilot and were able to learn of what was going on through a female passenger who wrote down what the pilot was saying.

- A deaf man scheduled to fly to Boston, Massachusetts to attend a conference in early November got a call from United Airlines on the morning before his flight. It was a voice call informing him that the flight had been cancelled, but he can take calls only through use of a TTY. This airline and others apparently do not have any way of identifying and informing consumers who use TTYs.
- Airport security personnel were inspecting people's hearing aids to make sure they were not transmitters. People who carry assistive technology such as TTYs have also reported delays while their equipment was checked by security personnel unfamiliar with the devices.
- During the week of 9/11, a woman from Pittsburgh who is deaf needed to make a business trip to Orlando. Her hearing husband had to accompany her to the airport because she was concerned about not being able to hear intercom messages about boarding. Thanks to his listening to the intercom broadcasts, she learned that the airline had cancelled and rescheduled flights. After several hours of waiting, he also heard intercom messages about delays to her flight due to some kind of leak on the original plane.

The woman had forgotten that cabs and cars would not be allowed to pull up to the terminal. Once she landed in Orlando, she had no way to call a cab because the TTYs in the airport would not work. She ended up having to trust a stranger to give her a ride, which she felt greatly endangered her safety.

When she arrived at the Orlando airport for her return flight, the airline switched her to an earlier flight. She desperately tried to call her husband before the flight so he would know she was arriving earlier. Again, no TTYs in the airport would work. The people at the information/help desk refused to assist her, saying that they were not allowed to make those sorts of telephone calls. She tried again to use the TTYs but lost all her change in the phones without being able to complete her call. She gave up when it got close to boarding time.

At the boarding area, she saw an agent announcing boarding and went up to him. He objected that her seat had not yet been called, but when she explained that she was deaf, he allowed her to board.

Arriving at the Pittsburgh airport, she tried to call her husband to let him know she had arrived early. She could not buy an AT&T phone card from the machines needed to use the TTYs because they would not accept her change.

She went to the information desk, which directed her to an Eckerd's drug store to purchase an AT&T phone card. The Eckerd's employees were unable to activate the card, so she then tried a Staples store. Staples did not carry phone cards. The woman then returned to Eckerd's, where they were able to get another card to work. She used this to try every TTY she could find, and all of them refused her card, giving the message "error in reading."

By that time, she had been trying for three hours to place a call and still had not picked up her luggage. She went to the baggage claim area, where she found three airline employees who helped locate her luggage. They also tried another phone with a TTY, which still would not work. By that time, she knew her husband would have left home for

the airport, so she resigned herself to just sitting in the baggage area and waiting until he showed up.

- Individuals who use hearing dogs have reported concern about the additional time required for check-in, heightened security, and the delays encountered in flying after 9/11. Finding areas on airport grounds where the dogs can relieve themselves has always been difficult, and new security rules often did not allow passengers access to these areas.

Experiences Since September 11

Deaf and hard of hearing individuals continue to report problems with air travel and new security measures. Just a few of these include:

- Security personnel giving instructions or information from behind or not getting a person's attention first and facing them.
- Staff and security lack understanding of hearing and guide dogs.
- Being asked to remove a cochlear implant processor.
- Lack of written warning information about security measures such as not being permitted to use restrooms 30 minutes after leaving and 30 minutes before arriving at Washington, DC's National Airport.

A positive development has been the use of some visual displays at gates and onboard planes.

HOME, SCHOOL AND WORKPLACE

Deaf and hard of hearing adults have had to learn to read their environment for cues to safety. In an article for the January 2002 *Journal of Court Reporting*, Keith Muller, then the Executive Director of the League for the Hard of Hearing wrote, "In emergency situations, the only indication people with hearing loss may have of the emergency is by observing the behaviors of others and then doing the same thing; they may find out the details after the fact."

Also in the same issue of the *Journal of Court Reporting* was this account of September 11 from a deaf student at NYU:

"Today is a day that I will never forget. I was on a bus to the Village from my dorm downtown. As I was sitting on the bus, everyone was looking in one direction. I didn't know what was going on. I looked out the window and realized the Tower was on fire. I was shocked. Some students were, too. It seems that the students on the bus just thought it was no big deal and that it was a manageable fire and turned away to read their books, listen to their Walkmans. I did see the second plane on its way to crashing into the building. I didn't see the impact clearly. I watched the fire progress as I stood on the street corner of Broadway and Waverly. Knowing that I couldn't miss class, I headed into the classroom. But midway through the lecture, everyone paused for a minute, like they had heard a weird sound. I didn't hear it. As I walked to Washington Square Park afterwards, I was terrified to learn that both buildings were gone. I immediately thought of my dad, who works on Exchange Place, not far from the WTC. I later found out he was home and safe."

- Susan Zupnik and Carl Andreason, both deaf individuals, did not know what was happening as they made their way downstairs from the 43rd floor of the North Tower on September 11. They observed sprinklers on the concourse level, saw sheetrock falling

from the walls, and noted that elevator doors were melted and twisted. After leaving the building, they encountered police who ran at them shouting. "We didn't know what they were saying," Zupnik said, "but we knew they wanted us to get away."

She and Andreason suddenly saw the crowd in front of them stop, turn around, look up, and, with fear on their faces, begin running frantically. The pair looked back to see what had frightened the crowd and saw a huge cloud of dust coming in their direction. Later, they realized the cloud was created by the collapse of one of the towers.

- At the Pentagon, a deaf woman had just been watching a television news report - with no captions - on her morning break, before returning to work. She suddenly felt a shock wave as the plane slammed into the building, and went to another section of the Pentagon to try to find out what had happened. She understood a panicked man telling her to get out quickly. Stunned, she went into the hallway and joined a group of people rushing up the stairway to the exit doors. She could smell smoke and eventually reached the Mall entrance where she saw people shaking and crying. "I was confused and speechless," she said. "With my hearing aid, I heard someone shouting, and I saw lots of guards yelling at us, telling us 'Go, go, go!' and pointing toward a door."

Once outside she saw black and heavy smoke, with flames shooting out of the roof. Numerous jets were circling in the sky. She asked some people to tell her what had happened, but no one bothered to answer her questions. She could not find anyone from her department. Many people were running around. Policemen kept yelling through megaphones. She walked several minutes with a group of people moving away from the building, and finally saw a man who could sign a little. "He told me that a plane hijacked from Dulles International Airport had attacked the Pentagon," she said. For four hours, she looked for a ride home, until a kind stranger gave her a ride.

- Some people found that the hearing people near them who knew of their hearing loss and the emergency still did not inform them. A deaf employee at the Department of State learned of the attacks through an e-mail from a concerned friend. She found crowds of co-workers had gathered in the lobby and were watching the news reports on television.

- Likewise a photography student with hearing loss was meeting with her academic advisor at the School of Visual Arts on 23rd Street in New York City, unaware of the Trade Center attacks. She noticed her advisor constantly looking back at the windows and looking very distracted. She didn't learn the reason for her advisor's behavior until later, when she went out on the street and saw the chaos.

- A federal government employee of Defense in Columbus, Ohio who is deaf first learned about the attacks from a deaf co-worker, and after some searching, was able to locate a captioned television program to learn more. An interpreter informed him that the Director had announced that everyone was to go home, which he did after a number of confusing communications. Before leaving, he was told to call a special assigned number to see if he should report to work the next day or not. The number was not TTY accessible.

- One state agency employee wrote, "It is demeaning and undignified to depend on hearing co-workers to tell us when an announcement was made and what it was in reference to. Sometimes they are not around." This employee suggests a visual public

announcement system so that people with hearing loss will be alerted to any emergencies or emergency drills that arise.²¹

The Buddy System

Using the buddy system to notify a co-worker or neighbor who is deaf or hard of hearing can be very difficult. The individual must first be located and be aware that someone wants to give information. Many do not hear their name called or the sound of a doorbell or a knock on the door.

Alerting deaf or hard of hearing individuals at night has added challenges. They take off their hearing aids and cochlear implants at bedtime, and in darkness it is difficult for them to see enough to speechread or comprehend sign language.

Often employers will try to use the buddy system as an answer to alerting a deaf or hard of hearing individual in an emergency. It sounds easy and costs nothing, but should only be one of several options. Past experiences have shown that people may forget their buddy responsibility or be away from the office or not near the deaf or hard of hearing employee's location.

On 9/11 one deaf individual who worked for the federal government said that his co-workers were in such a hurry to leave for home that they did not have time to tell him what was happening. Many other employees have shared similar stories. In times of stress, their needs were forgotten.

Access for American Sign Language Users

Until September 11 there were no widely recognized signs in American Sign Language for such words as terrorism, or for names such as Osama bin Laden. Some terms in English also did not have an American Sign Language equivalent, such as "airstrike" and "freezing assets."

Those for whom American Sign Language is a native language often were the last to gain an understanding of what had happened, be it the World Trade Center, the Pentagon, or the anthrax attacks. Unable to hear news reports and unable to fully understand text accounts on television and in newspapers, this group of individuals needed messages and explanations conveyed visually by sign language. For most communities, no good network existed to reach them.

During the anthrax scare in Washington, D.C. deaf postal workers in the Brentwood Road mail processing plant²² and other facilities expressed frustration in trying to find out about the outbreak. Sign language interpreters were not provided to pass on the same information that other employees were receiving.

Needs of Deaf-Blind Individuals

Individuals who are deaf-blind have unique needs in emergency situations. The vast majority of these individuals still have a degree of residual vision. Some technologies work better for them than others. For example, Light Emitting Diode (LED) screens are easier to read than liquid crystal displays (LCD). They usually prefer large print displays when available. Deaf-blind

²² This facility has since been renamed Joseph Curseen Junior and Thomas Morris Junior Processing Distribution Center in honor of the two workers who died from anthrax poisoning. It is within walking distance of Gallaudet University.

computer users may benefit from large print software or Braille readers to make text more accessible to them.

Visual and vibrating alarm systems are not always dependable for individuals who are deaf-blind in emergencies. The strobe light used for visual systems may not be strong enough to see when it is not dark, or may not be seen at all unless it is directly in the individual's field of vision.

Pop-ups on a computer screen with information about emergencies may work for individuals with some residual vision, but they are inaccessible for those who are fully blind and depend on Braille or screen readers.

Deaf-blind individuals will need to be escorted during evacuations. They cannot rely fully on visual cues or audible cues. Instead, they rely more on tactile cues. This puts them more at risk during an emergency. The American Association of the Deaf-Blind (AADB) makes it a practice during their conventions to train deaf-blind attendees to recognize that if someone draws a big "X" on his or her back with a finger, it is an emergency. When this happens, they are to drop whatever they are doing and immediately go with a personal assistant to safety before asking questions.

Deaf-blind individuals respond to communication signals through vibrations and tactile or close-vision sign language. Communication needs vary among such persons, depending on the amount of residual vision and hearing, and their communication preference. Some require sign language at close proximity (close-vision), while others prefer signing within their hands (tactile). Those who are not familiar with sign language prefer words be written on their palms with a finger. The only way to know these preferences is to ask when initiating a conversation. Only a few individuals may have access to funding that allows them to hire their own personal assistants to guide them wherever they need to go for a limited number of hours.

Needs of Non-English Speakers

An additional layer of complexity is added when non-English speaking Americans are also deaf or hard of hearing. Their hearing loss may make it very difficult to learn the language, and programs to address their needs in an emergency are scarce. The Virginia- Maryland- Washington, DC metro area, for example, has a large population of individuals who speak more than a hundred different languages other than English.

Families with Deaf and Hard of Hearing Individuals

Families with deaf and hard of hearing family members have their own set of challenges. Mary Ann Kowalczyk, whose daughter is deaf, remembers 1993 when her husband was working on the 89th floor at the time the World Trade Center was bombed. "Through all of it, my daughter was kept out of the loop almost all of the time because she was deaf. The closed captioning was so sparse that it was almost worthless. However, there were a few hours of attention to the needs of those who have little or no hearing. WNBC actually brought interpreters into the studios and used the lower left inset [of the screen] for the interpreters. The interpreters were available when they could locate them.

"Now it's eight years later [on September 11]...Our daughter was concerned because there are days each week that her father goes to the 91st floor of the WTC Tower 2. He did not go on Tuesday but was scheduled for the next day. She e-mailed us frantically. She tried to reach me by telephone via relay but was unsuccessful at first since I was taking care of my elderly mother and out of my home. We tried to call her and the circuits were busy. All the information she was

receiving was secondhand from her hearing co-workers because there were no interpreters at the hospital where she worked, none of her co-workers use sign or ASL, and the other information had to be lipread by her.

"This time also there were no interpreters on the screen. My hard of hearing and deaf friends who need the captioning were telling me that the captioning in New York area has been horrendous."

"I knew that there had been an ABC special about children and how to answer their questions and listen to them ask their questions. Because it was being rebroadcast, I contacted my daughter to tell her it might be helpful to her. But as I watched it today, it wasn't captioned! Why couldn't she and her husband have access to help that they could use now?"

More than two years later, a deaf mother wrote this November 2003 response to the NVRC/Community Resilience survey:

"I would like to see captioning for live coverage on TV during the news. Since I do not have the TV on all the time, I would like the schools to call me and tell me if there's a change of plans for the day [such as] cancellation of school due to snow, or postponement due to fog. I feel very powerless. If I am not constantly watching the television or online (which is impossible when you have young children and a home to care for), I lose information and I feel there's not much I can do. The schools aren't willing to consider the difficulty deafness can cause in such circumstances. It's always my responsibility to figure it out."

Think About Visitors

The vast number of people who are deaf and hard of hearing underscores the need for widespread emergency planning.²³ On any given day, these individuals might be speakers at a school, clients in an office, making a deposit at a bank, shopping at a store, doing research in a library, touring a museum, interviewing for a job, or riding on a bus. Every possible location should take this into account.

The Effect on Mental Health

Numerous deaf and hard of hearing people reported greatly heightened anxiety and symptoms of depression following September 11. Specialized mental health and counseling services by people trained to work with and sensitive to the needs of deaf and hard of hearing individuals were in short supply and unprepared for such heavy demand.

On September 20, 2001, the League for Hard of Hearing in New York City addressed this need by hosting two open meetings for support and discussion, one for deaf people who use American Sign Language and another for hard of hearing people who use English. The League's Mental Health service provided some crisis intervention and ongoing supportive treatment to anyone who called or came in.

Project Liberty at the New York Society for the Deaf was a FEMA/CMHS funded disaster recovery program which offered free and confidential crisis counseling, support and intervention to the deaf community in the New York City area. Northern Virginia's Community Resilience Project began offering counseling and education to deaf, hard of hearing, late-deafened and deaf-blind individuals in July 2002.

²³ The Americans with Disabilities Act Title III addresses requirements for accommodations in public facilities.

Gallaudet University worked with the American Red Cross to provide 'deafness related' licensed mental health counselors to become part of the Red Cross Disaster Mental Health Services, with the ability to work with deaf and hard of hearing individuals during disasters. The two have entered into an agreement to for training and establishing of a database with plans to build a network of certified counselors across the U.S. who can respond immediately in emergency situations.²⁴

Since 9/11

The Americans with Disabilities Act, which took effect in 1990, requires that state and local governments accommodate the needs of deaf and hard of hearing people in planning for emergencies. Many government planning entities have had a tendency to rely on local media to publicize information about emergencies and have overlooked their responsibility to broadcast this information themselves in a way that is accessible for everyone.

A common question from employers, government agencies, businesses and others to agencies and organizations serving deaf and hard of hearing individuals has been "What is the one thing I can do to meet the needs of deaf and hard of hearing persons in emergencies?" One thing is definitely not enough.

Surveys continue to show that individuals who are deaf or hard of hearing have learned about emergencies through a wide range of sources. They also have many different preferences for how they would like to be informed in an emergency. The NVRC/Community Resilience survey found that, by an overwhelming margin, individuals reported they did not feel they had the same access to emergency information as people without a hearing disability.

Training materials have been sought to help individuals who are deaf and hard of hearing better understand emergency planning, only to find that they were not captioned, including a video on The Community Exercise Program from FEMA. And S. Randall Collins, Outreach/ Training Coordinator of the Arizona Technology Access Program, has pointed out the need for government inclusion of deaf and hard of hearing individuals in training programs and mock disaster drills.

The inclusion of deaf and hard of hearing individuals in emergency drills in Arizona has made it possible to identify certain problems. In one full-scale bioterrorism drill, it was discovered that hearing aids and cochlear implants had to be removed for the full-body decontamination spraying. These devices were not returned until the drill was completed, making further triage for the deaf and hard of hearing individuals difficult.

Studies show that 99% of emergencies and disasters are local ones, but local disasters can have a broad impact. Every individual who is deaf and hard of hearing has friends, family, business associates, co-workers and others who live in other locations. They were concerned during the California wildfires, the Florida hurricanes and the Northeast power outages. This has been a significant factor in the continuing strong demand for captioning of all news programs.

Promising Developments

The needs are many, but there are promising signs that more attention is being given to address them. A few of the recent developments are:

²⁴ The Gallaudet University contact is Diane Morton, a professor in the Department of Counseling.

- FEMA released a training course on December 1, 2003 to help safeguard seniors and people with disabilities, available on CD-ROM.
- The U.S. Department of Agriculture has provided numerous emergency communication programs for employees who are deaf or hard of hearing.
- The National Organization on Disability established an Emergency Preparedness Initiative.
- Gallaudet University established a Crisis Management Team and website with emergency information.
- The FCC held a forum on emergency communication needs of people with disabilities and established a Media Security and Reliability Council whose report included a recommendation that local media should engage in coordinated activities to assure the flow of emergency information using multiple languages and the means to make this information available to persons with disabilities in their communities.²⁵
- Arizona formed an Emergency Services Committee which includes the chair of the Governor's Statewide Independent Living Council, State ADA Director, Deaf Specialist from the Arizona Commission for the Deaf and Hard of Hearing, and Coordinator of Outreach/Training for the Arizona Technology Access Program working with the Arizona Department of Emergency Management, Red Cross, Salvation Army, and fire chiefs, firemen, CERT teams and trainers throughout the state.
- Washington State's 9-1-1/TTY Education Program did a survey and report of emergency management and accessibility to deaf, deaf-blind and hard of hearing individuals.²⁶ They also published an Emergency Notification Resource List in May 2002.
- A collaboration by consumers, government officials and broadcasters in Virginia resulted in a Best Practices Guide for access to emergency video programming through captioning in June 2004.²⁷
- North Carolina's Forsyth Center for the Deaf and Hard of Hearing worked with Winston-Salem Police Department and Winston-Salem Forsyth County Office of Emergency Management on a 911 system that works with two-way pagers and wireless web accounts and takes the names and addresses of deaf people so emergency personnel can warn them at their homes. North Carolina's legislature passed a bill in 2004 that included a position of statewide emergency coordinator for its agency serving deaf and hard of hearing individuals.
- Virginia's Arlington County has held two forums on the needs of people with disabilities in emergency preparedness.

²⁵ "Public Communications and Safety Working Group, Final Report," FCC Media Security and Reliability Council, February 18, 2004.

²⁶ This report was written by Donna B. Platt and Troy V. Braswell and dated January 19, 2004.

²⁷ Access to Emergency Video Programming Through Captioning in Virginia: A Best Practices Guide for Broadcasters, Consumers Who are Deaf or Hard of Hearing, and the Virginia Department for the Deaf and Hard of Hearing," available from the Virginia Department for the Deaf and Hard of Hearing.

- The Red Cross published “Disaster Preparedness for People with Disabilities.”
- Minnesota hosted a forum on TV access, involved deaf and hard of hearing individuals in a Terrorism & Health Task Force team, and had a workshop on needs of individuals who are deaf and hard of hearing at a statewide conference for emergency managers.
- President George W. Bush issued an Executive Order on July 22, 2004 emphasizing the need to strengthen federal agency emergency planning for individuals with disabilities and establishing an Interagency Coordinating Council on Emergency Preparedness and Individuals with Disabilities.

Conclusion

The events of September 11, 2001 and its aftermath exposed many glaring weaknesses in the emergency preparedness infrastructure that compromise the safety and security of 28 million Americans who are deaf, hard of hearing, late-deafened and deaf-blind. Experiences with emergencies during the past three years continue to reinforce the urgent need for these weaknesses to be addressed.

Top Priority: An Effective Emergency Communication System

America’s current public warning and emergency communication systems get a failing grade from deaf, hard of hearing, late-deafened and deaf-blind individuals. There are too few effective options for communication and the options currently available have largely proved unreliable.

Hearing loss has a major impact on communication in emergencies because it is impossible to depend on auditory information. Sirens, shouted warnings, calls from rescue workers trying to locate people in rubble, knocks on doors to give urgent information, quick phone calls to give a heads-up about a developing situation, radios, public address systems – all can be useless. Captioning of television and Internet news and coverage for text messages is not a given. Without effective systems, deaf and hard of hearing individuals do not know that there is an emergency, cannot learn what steps must be taken to protect themselves and others, and have no access to critical resources in the aftermath of an emergency.

This report includes an extensive list of recommendations designed to increase the number and variety of communication options, ensure reliability, and build in redundancy. The recommendations will require widespread consumer collaboration with government agencies, legislators, broadcasters, manufacturers, program and service providers, product developers, telecommunications and Internet providers, public safety officials, and many other entities.

Developing an effective emergency communication system for individuals who are deaf and hard of hearing will help everyone. In an emergency, many people with no hearing loss have difficulty hearing. The combination of stress and noise such as high winds, explosions, screams, or the roaring of a fire can make it impossible to hear well.

Involvement and Integration in Activities

Other weaknesses identified in the nation’s emergency preparedness planning make it imperative for quick action to ensure that individuals who are deaf, hard of hearing, late-deafened and deaf-blind are actively involved in community, regional, state, and federal emergency planning processes, equipment testing, disaster exercises, CERT trainings, Citizen Corps activities, training of public safety and security personnel, and other activities.

The involvement of individuals who are deaf, hard of hearing, late-deafened and deaf-blind will tap into their tremendous talents and quickly help to increase understanding of their needs in a wide variety of areas.

Emergency planners are setting up systems across the U.S. that do not take into account the unique needs of individuals who are deaf, hard of hearing, late-deafened and deaf-blind. History has repeatedly shown that redesigning and adapting equipment, programs and services because these needs were not taken into account from the beginning is almost always more expensive and rarely as effective.

Additional recommendations in this report are intended to build a national network that will encourage participation and collaboration and provide the tools to help ensure its success. This network will offer technical assistance, research, education, training, planning, advice and consultation, and development of model programs and services. It will create a knowledge bank of the nation's best expertise to tackle a wide range of needs.

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