

# **Minimum Standards for Emergency Telephone Notification Systems**

**NENA Minimum Standards for Emergency Telephone Notification Systems  
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**Prepared by:  
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Emergency Telephone Notification Systems Working Group of the Standard  
Operating Committee**

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## **Minimum Standards for Emergency Telephone Notification Systems**

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NENA's 9-1-1 Center Operations Committee has developed this document. Recommendations for change to this document may be submitted to:

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## ACKNOWLEDGEMENTS

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NENA wishes to express its appreciation to the above team members for their work in developing the operational standards listed in this 9-1-1 Center Operations Committee standards document.

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## 1.0 Executive Overview

Emergency Telephone Notification Systems (ETNS) are fast becoming a necessary tool for public safety agencies nationwide. Large metropolitan areas and communities of all sizes have installed these systems to provide essential emergency information to their citizens. The National Emergency Number Association (NENA) believes acquisition and deployment of these emergency notification systems will only increase with today's homeland security and domestic protection concerns. For instance:

- The United States Office of Homeland Security in its July 2002 Report titled *National Strategy for Homeland Security* stated that it “would pursue technologies such as ‘reverse 911’ which would call households” to provide information about vulnerabilities and protective measures.<sup>1</sup>
- Emergency telephone notification systems started to take root in the middle 1990s for many reasons. Local public safety officials realized ETNS systems could effectively augment other notification methods such as sirens, NOAA Weather Radio, and broadcast announcements.
- ETNS systems provided the ability to precisely target populations in specific geographic locations better than existing alternatives, particularly when ETNS systems were integrated with geographic information systems (i.e., digital maps).
- The telephone, more than any other communications medium, allows officials to deliver specific actionable information that lets those in harm's way know exactly what to do, what to expect, or what to look for.
- The telephone is always on, providing the opportunity to reach nearly everyone within a target area either live or through voicemail.

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<sup>1</sup> See [http://www.whitehouse.gov/homeland/book/nat\\_strat\\_hls.pdf](http://www.whitehouse.gov/homeland/book/nat_strat_hls.pdf) for more information.

According to NENA's *Report Card to the Nation*, wireline 9-1-1 service is available to 97.9 percent of the U.S. population. And because each of these wireline phones can be physically located on a map, using the telephone to distribute emergency information in a crisis has the *potential* to be a very effective method of emergency notification.

This Emergency Telephone Notification Systems Standards document, developed by the Emergency Telephone Notification Systems Working Group of the Standard Operating Procedures Committee, is intended to provide guidance to the public safety and private sector communities on operational, administrative and procedural issues – along with general technical considerations - germane to the proper acquisition, implementation and management of an ETNS system.

## 2.0 Introduction

### 2.1 Purpose of Document

The purpose of this body of standards titled “*Minimum Standards for Emergency Telephone Notification Systems*” is to provide guidance to the public safety and private sector communities on operational, administrative and procedural issues – along with general technical considerations - germane to the proper implementation and management of an ETNS system.

The standards are intended to provide a basis for self-assessment and constructive regulation of ETNS system providers. Further, the standards establish criteria for the responsible use of these systems as it relates to emergency management, emergency communications, and community awareness (in general terms).

*This standard applies to PC-based and Web-based systems.*

### 2.2 Reason to Implement

One of the principal reasons NENA developed these operational standards is that real world experience shows that their potential as an emergency notification tool is not always realized. This document is intended to provide the user community with on-point administrative, procedural and functional information useful to the successful purchase, implementation and deployment of an emergency telephone notification system in their community.

### 2.3 Benefits

A key reason NENA decided to undertake the development of standards with regard to ETNS systems is to provide appropriate guidance and useful information to the public safety community so that the tremendous life-saving and community awareness potential of these systems may be realized. The core intent is to provide substantive information on the three key elements of any ETNS system: Data accuracy – System reliability – Dial Out speed.

The standards listed in this document are viewed as minimum functional, operational and administrative requirements. The promulgated call center standards are also intended to guide ETNS system users in:

- 1) Assessing their internal operations to determine whether they meet the intent and spirit of the standards, and



- 
- 2) Use the standards as a mechanism to strengthen their organization to the managerial, operational and/or technical requirements listed.

NENA's emergency telephone notification system standards were developed by professional public safety personnel with extensive hands-on management, operations, procedural, and technical backgrounds, as well as private sector personnel with many years of personal and professional experience in the designing, manufacturing and marketing of ETNS systems.

#### **2.4 Technical Impacts Summary**

NENA does not believe that the PSAP or call center community will be burdened with additional technical equipment requirements by meeting the standards listed in the document. Rather, NENA believes that many of the general technical, facilities and procedural standards stipulated in this document represent sound practices and may be already in place.

#### **2.5 Document Terminology**

The terms "shall", "must" and "required" are used throughout this document to indicate required parameters and to differentiate from those parameters that are recommendations. Recommendations are identified by the words "should", "desirable", "preferable" or "preferably".

#### **2.6 Reason for Reissue**

NENA reserves the right to modify this document in the interest of public safety and as conditions or circumstances warrant. Whenever it is reissued, the reason(s) for reissue will be provided in this paragraph.

#### **2.7 Costs Factors**

It is not the intent of NENA to burden any manufacturer, system developer or distributor to add additional or ancillary costs in relation to the standards listed in this document, and some of the features described.

#### **2.8 Cost Recovery Considerations**

Normal business practices of system manufacturers are assumed to be the cost recovery vehicle – if any is needed – when implementing the ETNS system standards listed in this document.

#### **2.9 Acronyms/Abbreviations**

The following acronyms/abbreviations are used in this document. Those acronyms/abbreviations that do not appear in the NENA Master Glossary will be added after initial approval of this document. The NENA Master Glossary may be accessed at the following web page:

[http://www.nena.org/9-1-1TechStandards/nena\\_recommended\\_standards.htm](http://www.nena.org/9-1-1TechStandards/nena_recommended_standards.htm)

ACB	All Circuits Busy
ACN	Automatic Collision Notification
ADA	Americans with Disabilities Act
ALI	Automatic Location Identification
ANI	Automatic Number Identification
CAD	Computer Aided Dispatch
CCH	Computerized Criminal History
CPE	Customer Premises Equipment
CO	Central Office
CPN	Calling Party's Number
DBMS	Data Base Management System
EAS	Emergency Alert Systems
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
ENS	Emergency Notification Systems
ESP	Emergency Services Provider
ESRI	Environmental Services Research Incorporated
ETNS	Emergency Telephone Notification System
GIS	Geographic Information System
GPS	Global Positioning System
HIPAA	Health Insurance Portability and Accountability Act
ICS	Incident Command System
ICR/IRR	Instant Call Recorder/Instant Recall Recorder
MDC	Mobile Data Communications
MDT	Mobile Data Terminal
MLTS	Multi-Line Telephone System
NCIC	National Crime Information Center
NIS	Not In Service
PBX	Private Branch Exchange
PDA	Personal Digital Assistant
PSA	Public Safety Agency
PSA	Public Service Announcement
PSAP	Public Safety Answering Point or Primary Public Safety Answering Point
PSTN	Public Switched Telephone Network
TDD	Telecommunication Device for the Deaf
TTY	Teletypewriter
TN	Telephone Number
UPS	Uninterruptible Power Supply
VoIP	Voice over Internet Protocol
WWW	World Wide Web

### 3.0 Existing Notification System Alternatives

Though no hard and fast numbers exist, conservative estimates indicate that today more than 73 million U.S. citizens - or approximately 25 percent of the total population - are within the reach of some type of emergency notification system (ENS).

There is a number of different emergency notification or alerting systems in use today. The following provides a simple alphabetical overview of these existing systems, along with general relevant commentary regarding them (where appropriate).

- **Broadcast Announcements and EAS**

Broadcast Announcements and the Emergency Alert System (EAS) are good tools for distributing general information to a wide coverage area but are not well suited to delivering actionable information to distinct population segments (e.g., evacuate, be on the look-out for).

For the EAS to be effective, it is essential for the intended audience to be tuned in to a regional radio or television channel. Actual practice demonstrates this is not always the case, particularly if the emergency event occurs in the middle of the night when most community residents are asleep.

**Commentary:**

Future technology may provide consumer television and radio monitors that turn themselves on when an EAS emergency alert is broadcast in order for recipients to be able to hear a message, but even that presumes that the person receiving the message is in the same area as the radio or television. This may not be the case if they are deeply asleep in a bedroom. Thus, a multi-faceted and more comprehensive methodology is needed to effectively alert residents under varying conditions.

- **Door to Door Notification**

Door-to-door notification would be an ideal way to communicate with specific individuals or neighborhoods. However, efficiency is impacted by the number of residential and business addresses to be contacted, the number of personnel available to “walk the streets”, and the amount of time available prior to the causal event (i.e., evacuation, storm landfall). It is highly unlikely that sufficient public safety personnel would be available to effectively provide such door-to-door notification services as their primary duties are in responding to impacts and effects caused by the impending event that often initially overwhelms the available public safety resources.

**Commentary:**

Door-to-door notification has the potential to endanger first responders by sending them directly into the path of the approaching storm, wildfire, or other emergency event.

Such an event occurred in the Big Thompson Flash Flood in Colorado in 1976, and in other events since that time, where public safety personnel were injured or killed trying to warn residents to evacuate since no other methodology was in place to provide such warnings. See <http://www.uccs.edu/~geogenvs/flood/> for additional information on this event.

▪ **Other Communication Devices**

There are many communication devices available that may be able to receive emergency notifications—fax machines, pagers, PDAs and cell phones. However, as with Weather Alert Radio, their level of penetration throughout the population is too low to ensure effective message delivery. Selecting distinct population segments based on geography with such devices is also highly problematic: no proven technology exists today to do so.

**Commentary:**

With regard to wireless communications, a few companies are experimenting with “pushing” emergency notification messages to a targeted area’s cellular/wireless phones/devices served by a single or combination of area cellular towers. NENA encourages the work in this area and looks forward to its widespread implementation and incorporation into standard ETNS level of services.

▪ **Sirens**

Sirens can be effective in their ability to alert people within hearing distance that a crisis or emergency situation may exist. Outdoor warning sirens/public address systems are most commonly located in densely populated urban settings, but are not useful in sparsely populated rural areas. Sirens are intended to alert the public to implement some pre-determined action (i.e., tune to radio and television for specific information on an impending hazard). However the public generally has no awareness of the need to do so and often will ignore sirens thinking they are a “test” unless they see the hazard approaching, which is often then too late to take appropriate action.

Moreover, outdoor warning sirens/public address systems were never intended to be loud enough to be heard inside buildings, homes, (particularly if residents are sleeping) or moving vehicles, and thus may have only limited effectiveness unless used with multiple and complementary systems designed to overcome such limitations.

Similarly, the meaning of sounded alarms can be open to wide interpretation. For instance, the Natural Hazards Center<sup>2</sup> has found that most people, in fact, do not know what a siren alert means. In many areas of the country, sirens are used only for specific emergencies, such as floods or tornadoes, and are of little use in helping public safety and law enforcement personnel alert residents to other events/crises, such as a suspect at large, a missing child, or other event with descriptive information (again referencing the “actionable” component).

▪ **Weather Alert Radio**

Similarly, Weather Alert Radio has limited applicability. Lacking proper feedback, public safety and emergency management officials have no way of being sure that everyone in their jurisdiction can be reached with such announcements because, similar to broadcast announcements, the intended audience must:

1. Have a specially equipped Weather Alert Radio, and
2. Be tuned in to hear the emergency announcement.

Further, by design, this emergency communication tool is similar to sirens, with applicability solely limited to weather related information. See <http://www.nws.noaa.gov/nwr/> for additional information on the National Oceanic and Atmospheric Agency (NOAA) and its Weather Radio Service.

The following standards address operational, administrative, and functional standards related to emergency telephone notification systems. The specific standards are categorized into the following sections:

- 3.1 System Administration
- 3.2 System Operations
- 3.3 Information Systems and Support
- 3.4 Facilities and Support Systems
- 3.5 Personnel Administration

**Order of Precedence**

In the event of conflict between this body of standards and others, the order of precedence shall be:

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<sup>2</sup> See <http://www.colorado.edu/hazards/> for more information, or email [hazctr@colorado.edu](mailto:hazctr@colorado.edu).

1. Prevailing state and federal law
2. Federal and state rules and regulations
3. Public safety standards and policies
4. This standard listed in this document.

**Dual Purpose Intent**

For the purpose of the standards listed in this document, the terms “PSAP Administrator” and “ETNS Systems Administrator” and “Systems Administrator” are interchangeable. It is not the intent of this standard to suggest that additional personnel are required to properly manage an ETNS system. Rather, the intent is to – where possible – differentiate between functional positions, all the while recognizing that duties and responsibilities of personnel often overlap.

## **3.1 SYSTEM ADMINISTRATION**

### **3.1.1 Written Procedures Required**

The PSAP administrator (or ETNS system administrator) shall draft written procedures on the appropriate use of the agency's emergency telephone notification system in consultation with others responsible for public safety/emergency management/emergency response matters within the community.

### **3.1.2 Authorized Use Defined**

Telephone based emergency notification systems shall be used for official public safety and/or emergency response/emergency management events only. These include, but are not limited to:

1. Community evacuation (or recommended action) instructions,
2. Missing child alerts (i.e., AMBER alert),
3. Inclement weather warning, and
4. Other natural or man-made community disasters.

#### **Commentary:**

Telephone-based emergency notification systems should not be used for political events of any kind or any other non-emergency/non-public safety related announcement that would not be considered a potential threat to life or public safety (e.g., "get out the vote" campaigns). ETNS Systems that use BESP-ANI/ALI 9-1-1 data for public safety emergency notifications of telephone subscribers may similarly be limited by statutes or rules of state regulatory agencies as noted in 3.3.4 of this document.

### **3.1.3 Authorized Activation Required**

PSAP managers or system administrators shall designate in writing personnel authorized to activate the agency's emergency telephone notification system. Personnel authorized to activate their agency's ETNS system will take appropriate safeguards to protect system and user passwords, system security, and prevent any unauthorized use of the system.

### **3.1.4 Accurate Telephone Number Database**

The emergency telephone notification system shall be comprised of the most accurate and complete telephone number data source available—preferably extracted from the 9-1-1 database—with methods and procedures in place to ensure that the outbound telephone subscriber notification database is regularly managed, error-corrected and updated.

**Commentary:**

Unless specifically prohibited by state law, the data comprising the outbound telephone number database should have its origins from the region's 9-1-1 database. Only 9-1-1 databases provide access to non-published numbers that comprise about 30% of all telephone subscribers nationally. By extension, it is clearly unacceptable to be unable to notify 30% of a given population in an affected area because of database accuracy issues. Moreover, such 9-1-1 databases are most likely to reflect most recent updates and changes thereby reaching a higher percentage of telephone subscribers. Agencies are encouraged to contact and work with their local telephone service provider(s) to obtain regular, timely updates to their outbound ETNS database.<sup>3</sup>

**3.1.5 Map-linked Telephone Number Database**

The emergency telephone notification system shall be capable of linking a telephone number to a specific physical location on a geo-coded map database (i.e., an X/Y). The system shall be capable of performing location "look-ups" via address and/or telephone number, and returning appropriate responses based on the inquiry.

**3.1.6 24 X 7 X 365 Support**

The emergency telephone notification system vendor/provider must provide for 24x7x365 technical and operational support from trained, dedicated staff.

1. PC-based systems shall have a comprehensive HELP file for access by users to execute any available function at the desktop level.
2. Web-based systems shall have a comprehensive HELP file for those functions available to or actionable by the authorized system user.

**3.1.7 Pre-Defined Events**

The emergency telephone notification system shall have the ability for the system administrator to define - at minimum – ten (10) pre-defined events with pre-configured messages and associated event and/or agency contact lists.

1. Contacts lists shall have the ability to contain at least 99 contacts per event, with multiple telephone numbers per contact (i.e., telephone, pager, cell, fax).

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<sup>3</sup> Some have interpreted the Wireless Communications Act of 1999 as authorizing the use of 9-1-1 database information for the purposes of emergency notification services (e.g., *to providers of information or database management services solely for purposes of assisting in the delivery of emergency services in response to an emergency.*) See <http://www.fcc.gov/911/basic/releases.html> for additional information.

Regardless, there exists a patchwork of states that allow the use of 9-1-1 database information in emergency notification situations, and still others that strictly prohibit the use. Lacking an unambiguous ruling by the FCC on the subject, the use of 9-1-1 database information – in conjunction with emergency notification systems – will continue to be spotty at best.



2. Activation of any event shall be a simple and straightforward process, completed in the least number of steps possible.

### **3.1.8 Self-Test Capability**

The emergency telephone notification system shall have the ability to run self-diagnostic reliability tests, including telephone circuit availability, telephone and map database integrity, point-to-point connectivity with aligned and/or critical systems (i.e., map, CAD, telephone switch), and provide a written report listing the PASS or FAIL status of each tested segment.

### **3.1.9 Geo-Coded Map Database**

If used in conjunction with a geographic information system, the emergency telephone notification system shall be integrated with a Geo-Coded map database (preferably in an ESRI map database format).

### **3.1.10 Audit Trail Report**

The emergency telephone notification system shall provide a detailed audit trail/after action report for each activation, including but not limited to:

1. Activation date and time,
2. Initiating authority,
3. Initiating user,
4. Event type,
5. Total number of telephone numbers called,
6. Total number of “first-try” successful connects,
7. Total number of unsuccessful connects and number re-tries for each unsuccessful connect,
8. Percentage of successful connects,
9. Percentage of unsuccessful connects,
10. An exception report detailing each unsuccessful attempt and number, and
11. If integrated to a geo-coded map, the preferred update exception method would be to update the map with an icon indicative of an unsuccessful attempt.

### **3.1.11 System Capacity**

The emergency telephone notification system shall be sized appropriate to the community it will serve. The installed ETNS system shall have the ability to successfully initiate and launch emergency calls to hundreds, if not thousands, of residents in minutes.

**Commentary:**

Almost all emergency telephone notification systems use the Public Switched Telephone Network (PSTN) for message delivery. During times of a large-scale disaster, the serving Central Office (CO) in the affected area may receive a high volume of both internal and external calls. Consideration must be given to determining if the Central Office/PSTN is capable of prioritizing the delivery of ETNS calls over routine subscriber calls in order to deliver the emergency messages to subscribers in a timely manner. This should not supercede priority for 9-1-1 calls initiated by subscribers, however.

Other impediments to delivery of ETNS messages include “call blocking” features used by subscribers to prevent unwanted calls. ETNS systems cannot override “call blocking.” Individual subscribers have to request the PSTN provider remove the feature from each subscriber’s phone in order to receive ETNS messages. The owner of the ETNS, or those who own the lines dedicated to the ETNS, may request the telephone service provider(s) to program an identity to the phones to get around a recipient’s call blocking feature. Otherwise those subscribers will not be able to receive timely warning messages.<sup>4</sup>

It is important that the PSAP manager or end-user consult with the host telephone network’s engineers for appropriate system sizing recommendations, as opposed to taking a “plug-and-play” approach.

The ETNS vendor should be directed to work with local telephone network engineers to understand areas of potential capacity constraints prior to the actual deployment and activation of ANY emergency telephone notification system.

**3.1.12 Authorized Users Defined**

The system administrator of an emergency telephone notification system shall have the ability to create, at minimum, three (3) levels of authorized users, and associated user access/privileges. They are:

1. System User  
The system user’s access level shall be such that his/her privileges allow baseline operational activation and control of an event.
2. System Supervisor  
The system supervisor’s access level shall include all functions allowed to the system user, with additional capabilities to add and/or modify user access levels,

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<sup>4</sup> A condition encountered during recent wildfire evacuations in Colorado where ETNS notifications were utilized. Radio and television stations were asked to broadcast messages to subscribers to request PSTN providers disable/remove their call-blocking feature.

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perform minor updates to system databases, and run statistical reports, as may be required.

3. System Administrator

The system administrator's access level shall include all functions allowed to the system supervisor, with the added abilities to add, modify and delete user access levels, perform system database updates, perform compliance audits and other event statistical reports (i.e., event audit trail), back-up system operations, and higher level functions common to system administrators.

**3.1.13 Immediate Jurisdiction Defined**

The specific geographic boundaries of the agency providing ETNS service, as well as the jurisdictional boundaries for any client agency, shall be delineated in writing and distributed to all agency personnel. Updated or revised information shall be added in a timely manner whenever service areas are added or collapsed.

**Commentary:**

It is important that the agency clearly describes the immediate boundaries of its jurisdiction, and any extra-territorial boundaries outside its immediate service area. Events involving overlapping or ambiguous jurisdiction should be avoided at all costs. Alternatively, the ETNS system administrator should consider installing in the PSAP a detailed official map outlining the boundaries of the jurisdiction for reference by communications personnel.

**3.1.14 Mutual Aid, Interlocal Agreements and Contractual Service Agreements**

Access to emergency notification services provided by the agency's emergency telephone notification system shall be defined by written agreement between the host and client agencies. This agreement shall identify responsibility for activation, associated system costs borne by the respective parties, and other issues deemed appropriate.

**Commentary:**

It is important that the immediate boundaries and any extra-territorial boundaries outside an agency's immediate service area be described. Events involving overlapping or ambiguous jurisdiction should be avoided. The ETNS system administrator should consider installing a detailed official map outlining the boundaries of its jurisdiction and jurisdictions for which ETNS service is provided for reference by communications personnel. Ideally, such jurisdictional limits should be color coded on any integrated mapping system used by the agency in conjunction with their ETNS system.

**3.1.15 Reporting Requirements**

The types of reports available from the agency's emergency telephone notification system shall be identified. These reports shall include:

1. A listing of all administrative reports available from the ETNS system,
2. Identification of the person or position responsible for development of the report(s),
3. A statement of the purpose of the report(s) and their frequency,
4. Examples of when reports should be completed, and
5. Clear guidance on distribution of the completed ETNS reports.

### **3.1.16 Responsibility Designated**

The agency shall designate in writing that the ETNS system shall be maintained in a state of operational readiness at all times. The agency shall also designate the position(s) or unit(s) / division(s) responsible for maintaining the system's readiness state.

### **3.1.17 Public Education Campaign**

The host and/or user agency should initiate a multi-level community-based public education campaign aimed at informing members of the community how the ETNS system works, purposes for its intended use, and other information deemed appropriate.

#### **Commentary:**

The intent of the public education campaign is to properly inform the user community of the following:

1. The existence of the ETNS system and what agency administers it;
2. Which agency may authorize activation of the ETNS system for an emergency notification event;
3. The capabilities of the ETNS system to support community-wide public safety notification efforts;
4. The purposes for which the ETNS system will be activated, along with a list of example events for which ETNS system use would be appropriate;
5. Anticipated/Appropriate actions of notification recipients when notified by their ETNS system of a specific emergency event;
6. Alternate telephone contact number(s) community members might call to replay a specific/relevant ETNS provided message; and
7. Local media roles and responsibilities in relation to the ETNS system and its activation/use including, but not limited to, public information officers, media relations specialists, and community relations personnel.

## 3.2 SYSTEM OPERATIONS

Prior to sending a message with an Emergency Telephone Notification System, the data representing the people (the recipients) who will be notified must be imported from an existing database, or manually entered. If a mapping mechanism is used, then the mapping data must also be imported into the ETNS system.

Once all event data elements have been loaded, the steps involved in the use of an Emergency Telephone Notification System are (generally):

1. Classifying the event
2. Determining the target population(s)
3. Constructing the message and notification criteria
4. Producing a permanent record/report of the event

### 3.2.1 Telephone Number Data

The ETNS system shall have the ability to read telephone number data in standard NENA ALI database format.<sup>5</sup>

#### **Commentary:**

If the ETNS System has a method for someone to enter data manually, it shall have the ability to maintain those manual entries even after any automatic or bulk data load (i.e., persistent data).

### 3.2.2 Additional Data Sources

It is recommended that the ETNS system be able to collect its data (e.g. telephone number, name, address, geographic area, language, special needs) from more than one source. In practice, this may be a simple, locally developed list of community members with special needs.

### 3.2.3 Persistent Data

The ETNS system shall permit the host agency to designate certain data as persistent, such that a new download or automatic update of data from one data source does not overwrite data that originates from a different source.

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<sup>5</sup> See NENA Standard 02-011 for additional information.

### **Commentary**

The PSAP may undertake a campaign to locally register cell phone users, non-English speaking residents, shut-ins, persons with special needs, or telephones which are not ordinarily listed in the telephone number source data in use with the ETNS system (e.g. phones in an office building).

If this data is captured in the ETNS database, it should not be overwritten by a subsequent load of standard name/address records. The ETNS system should allow the system administrator to assign “write-protection” of specific locally developed database(s).

### **3.2.4 Classifying Events**

For systems that offer the ability to classify a notification event, though it is recognized that there will be some difference in terminology between agencies and system manufacturers, emergency notification events should generally be categorized as follows:

1. Emergency Warning (e.g., approaching storm)
2. Emergency Concern (e.g., lost/missing person, *Amber Alert*)
3. Emergency Alert (e.g., escaped/at-large criminal)
4. Emergency Other (agency defined emergency event)

### **Commentary:**

It is recognized that not all vendors’ systems may provide system controls to classify notification events. Where system controls are not available, classification is an administrative procedure. Further, if the classification of the event does not have any bearing on how the ETNS system handles the event, then the classification is purely an administrative function.

### **3.2.5 System Message Identification**

ETNS system messages should provide some form of header indicating the classification of the event. This may be in the form of a preamble in the body of the message, a special caller ID, or other visible and/or audible indicator.

### **Commentary:**

NENA recognizes that the capabilities of telephone switches within the public switched telephone network (PSTN) infrastructure vary greatly, even within a single jurisdiction. The intent of this recommendation is to provide a means of identifying the type of event to the receiving party as soon as possible, and provide clear, concise “actionable” information.

### **3.2.6 Targeting Capabilities**

Targeting is the process of selecting the group or groups of recipients who are to be notified with a particular message. Though ETNS systems vary from manufacturer-to-manufacturer, available targeting mechanisms are found to generally fall into three (3) broad categories: Static lists - Geographic criteria - Associative lists.

#### **3.2.6.1 Static Lists**

ETNS systems that provide the ability to target a static list should allow any number of lists and any number of entries on each list. Some systems additionally allow for the creation of lists that contain other lists. Notifying a static list of recipients is particularly useful for communicating with first responders (e.g. an off-duty platoon, special services personnel).

#### **3.2.6.2 Geographic Criteria**

ETNS systems that provide the ability to target the population within a geographic area usually do so on the basis of a graphical map of the area. As such, these systems must be interfaced to a regional geo-coded map database. Further, the system should have the ability to target a wide range of map-centric configurations including, but not limited to, the following:

1. Map Grid Reference
2. Map Coordinates (define)
3. Point-in-Polygon

#### **3.2.6.3 Associative Lists**

Associative lists are lists that are created dynamically, based on some selection criteria. For example: The faculty, staff, and students of an elementary school are all associated with their school. Another example might be everyone who lives in a particular community or water district. ETNS systems that have the ability to target associative lists should be able to use the identification criteria that are of particular importance to the PSAP. These may include, but are not be limited to, the following:

1. Community Name
2. Facility or Complex Name
3. Subscriber/User Information
  - a. Deaf/Hearing Impaired
  - b. Special needs
  - c. Other attributes as may be appropriate

**Commentary:**

List development, update and maintenance is an administrative function and should be assigned to a properly trained individual. Aside from compiling a master database, any lists or sub-lists developed is the responsibility of the ETNS system administrator.

Some notification systems also allow targeting by area code or telephone number prefix. As these criteria do not generally have any direct association with an emergency (except insofar as they target a large subset of the population), they should not be viewed as initial targeting criteria.

**3.2.7 Security and Confidentiality**

The ETNS system administrator shall develop and enforce procedures that ensure that the confidentiality of data such as unlisted phone numbers or constituents' medical conditions is strictly maintained throughout any data transfer and load process.

**3.2.8 Authorization of Events**

ETNS system shall provide a mechanism to ensure that when a calling event is requested, the person who triggers the calls has the authority to do so.

**3.2.9 Audit Trail: Recording of Data/Voice Elements**

The recording of data regarding the triggering and execution of a notification event shall be such that a post-event auditor is able to view the map, data, selection criteria, event classification, targeted numbers, and all other items that were used by the PSAP that executed that notification event, as they appeared to the PSAP when the event was executed. Furthermore, the message that was delivered to each targeted telephone number shall be recorded.

Without exception, the following shall be recorded for each emergency event activation when using an emergency telephone notification system:

1. Visible data  
All visible data on the emergency telephone notification system, including mapping information related to the event need a working definition for visible data
2. Outgoing calls  
Outgoing call information, pre-recorded announcements, and any called party action required.

Data collected – including visible and outgoing call information – will be collected and saved such that any alterations to it may be audited and such that it can be retrieved in whole by referencing the emergency event.



**Commentary:**

The criteria seen by the person triggering the notification event is a key audit element. If a notification event is triggered via the selection of a drawn shape on a map, the map as it was displayed at the time of the selection, along with the selection criterion (the exact shape) constitute the visible data. The resultant list, along with the date, time, recording(s) played, response(s) gathered, and disposition of each call constitute the outgoing call information.

**3.2.12 Event Evaluation Criteria**

The agency shall develop written procedures, immediately available to all personnel and system users, that provide appropriate guidance on:

1. Evaluating the characteristics of an event to determine whether activation of the ETNS, or other resource, is warranted, and
2. A hierarchy of events that prioritizes ETNS-eligible events in a higher to lower priority schedule.

**3.2.13 Retrying Failed Calls**

The ETNS system shall be able to retry calls to telephone numbers that were busy or did not answer. Additionally, the ETNS system shall be able to distinguish between various intercepts to retry calls that failed due to lack of capacity in the destination telephone dialing area. Clearly, it is important that the ETNS agency works collaboratively with the local service provider(s) to define how best to manage call volumes to end users.

**Commentary:**

There are many rural areas that have a small number of telephone circuits relative to the population. In these communities, a high capacity ETNS dial-out system can overwhelm the ability for the telephone company to deliver the ETNS system's calls and provide local services. Such a condition results in an all circuits busy or "ACB" intercept message to the calling party.

An appropriate behavior when this condition arises might be for the ETNS system to reduce the number of calls to the affected area and retry calls that were intercepted, albeit in a more paced way. ETNS systems should be able to distinguish between this ACB condition and other intercepts, such as Not In Service (NIS), which indicates that the called number is not valid.

**3.2.14 Private Business Exchange (PBX) or Multi-Line Telephone Systems (MLTS)**

The Emergency Telephone Notification System shall be designed to consider and address accessibility to Private Business Exchange or Multi-Line telephone systems connected to PSTN central office equipment.

**Commentary:**

Private Business Exchange or Multi-Line telephone systems are prevalent in many communities serving a variety of businesses, hotels, schools, government agencies, multiple unit apartments/housing developments, etc., and represent a challenge for ETNS systems to be able to reach individual PBX/MLTS telephone subscribers directly if subscriber phone numbers are not resident in the 9-1-1 or other ALI data base.

Such systems may range from very small to extensive (e.g., a University with 15,000 PBX subscribers). ETNS system programming should have the ability to manage call initiation so that the system does not spend an inordinate amount of time attempting calls to one large PBX customer and thus does not place calls to other users.

Accordingly, the ANI/ALI data for PBX/MLTS systems should be downloadable or stored in the data files of the ETNS provider in order to access telephone subscribers served by such systems. Preferably, PBX/MLTS administrators should provide current, regularly updated data to 9-1-1 or other data base providers to ensure accurate delivery of ETNS messages.

PBX/MLTS phone systems are also likely to be challenged by ETNS high speed/high volume delivery of emergency messages in that the number of available in-bound trunks for any given PBX/MLTS phone may comprise less than 2 per cent of the number of total internal subscribers (e.g., a PBX with 15,000 internal lines may have only 300 inbound trunks to receive calls from a central office).

**3.2.15 Voice over Internet Protocol (VoIP) Subscribers and ETNS Notifications**

Voice over Internet Protocol (VoIP) telephone system providers shall be included in ETNS notification planning and technical connectivity provided. Although the FCC and/or state public utility commission regulations may or may not be able to provide similar direction for VoIP providers, VoIP system providers are strongly encouraged to provide accurate and currently updated subscriber ANI/ALI information just as wired service providers are required to do.

**Commentary:**

Voice over Internet Protocol VoIP telephone system providers are now becoming more prevalent in public and private sector applications. Care must be taken to ensure that VoIP telephones can also be accessed via the 9-1-1 ANI/ALI database and associated geographic coordinates in order to deliver ETNS messages to VoIP subscribers known to be in a target notification area.

NENA supports the technical and operational standards work currently underway by its standing Technical and Operational VoIP committees, and looks forward to the adoption and implementation of proposed technical and operational standards for VoIP users.

### **3.2.16 Increasing Notification via Return Call**

The ETNS system should have a mechanism to allow recipients to dial in and retrieve the same pre-recorded message that was delivered to them or an updated one, if applicable.

#### **Commentary**

A 9-1-1 PSAP may encounter a large number of calls from recipients resulting from a notification event, particularly from those who did not hear or understand the message from the ETNS system. Having a dedicated “referral” telephone number for persons to call and rehear the message can reduce this traffic and increase the effectiveness of the PSAP and its operations. This call back number should be the same number displayed in the recipient’s caller ID unit and should have sufficient capacity to support anticipated demands. See 3.2.19 for additional information on message language diversity.

### **3.2.17 Relevant Information**

The agency shall develop written procedures for obtaining and recording relevant information for each ETNS eligible event category (see 2.1 Classification of Events), including, but not limited to:

1. Case number (i.e., control number, sequence number, incident number)
2. Date and time of request
3. Name and address of caller/requesting party
4. Type of ETNS event
5. Location(s) affected (e.g., communities, grids, area codes, pre-fixes)
6. Authorizing (or Activating) authority
7. Time of initial activation
8. Time of all other activations (if any)
9. Disposition of ETNS event (e.g., captured, found, evacuated, terminated)

### **3.2.18 Special Needs Procedures**

The agency shall draft written procedures outlining actions taken by communications personnel, field personnel, and/or other agency/response personnel in relation to known individuals and/or locations in the community that require special needs handling or follow up (i.e., hospitals, hospice care facilities, residential care centers). This includes deaf/hearing impaired, incapacitated, non-mobile, bed-ridden, and other special needs constituents.

### **3.2.19 System Language Diversity**

The ETNS system shall not restrict the ability of the host agency to communicate with other than English-speaking constituents.

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**Commentary:**

The host agency should undertake a community assessment of the most common languages spoken in their service area(s) to determine the different language requirements of their ETNS messages. Agencies are encouraged to seek the assistance of public and private sector agencies and the news media when performing this assessment.

Outreach programs should target non-English speaking communities well in advance of emergencies to acquaint the non-English speaking population with where to go for emergency information in their native language (i.e., alternate telephone number).

**3.2.20 Alternate Distribution Sources**

Providing a resolution for multiple language emergency notification is not the role of the emergency notification system vendor but of the community.

Where applicable, the community should maintain a contact number (Telephone, TV or radio broadcast channel) that would provide additional information to a non-English speaking community member.

**Commentary:**

Public education campaigns should be undertaken by a coalition of public safety, emergency management, private sector, and volunteer organizations (e.g. American Red Cross) to inform the public of the existence of the ETNS system and how it will function. Such information can be published in local telephone directories near the emergency information page and educational or other informational outreach venues (e.g., local cable/community television public safety announcements (PSAs), newspaper articles, training videos, web portals).

Similarly, community disaster education programs - such as that provided by the American Red Cross and FEMA - can be shared with local populations to help them prepare for and respond to such emergencies appropriately. The demographics and population bases of each community served by the ETNS system should be considered and efforts made to reach out to those populations to prepare them for appropriate response(s) to warning messages from area ETNS systems.

**3.2.21 Composition and Public Response to Emergency Warning Messages**

Effective warning messages shall be structured and delivered so that the public will:

1. Perceive the warning (hear, see, feel)
2. Understand the warning
3. Believe that the warning is real and that its contents are accurate
4. Confirm the warning from other sources or people
5. Personalize the warning
6. Decide on a course of action, and

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7. Act on that decision<sup>6</sup>

**Commentary:**

Red Cross Community Disaster Education and other Emergency Management Experts suggest there is a tendency on the part of the public to “deny” or “minimize” any sense of danger until it may be too late to react and avert serious injury or death. Proper structuring of the to-be-delivered emergency message plays an integral role in obtaining compliance by the public with the recommended action plan.

When dealing with non-English speaking populations or those from different cultures, the ability to understand or perceive the nature of a natural or man-made hazard may be very limited. For example, those who may have emigrated from a dry arid country may have little understanding of the dangers and challenges of flash floods in mountainous areas.

**3.2.22 Accessibility to Deaf/Hearing Impaired Individuals**

Emergency telephone notification systems shall have the ability to:

1. Communicate with Baudot and/or ASCII-based TTY/TTD devices and send scripted emergency messages to the deaf and/or hearing impaired user community.
2. Provide immediate feedback to the system user/system administrator for those deaf/hearing impaired telephone subscribers who did not receive the scripted emergency message. Such feedback shall include telephone number, complete address, and any other additional information available.

**Commentary:**

Emergency telephone notification systems have the ability to identify the existence of a device for the deaf via a tone emitted by the device. (When the calling platform encounters that tone, the system delivers a TDD (Text) message.) If the ETNS system has this feature, it shall be able to demonstrate that it can distinguish between a TDD and a standard computer modem.

Emergency telephone notification systems may also have the ability to identify users in the community who are deaf and/or hearing impaired via an attribute element or other system “tag.” Such identification may be via a locally maintained database with a listing of an alternate contact number (i.e., TTY number), or via an icon indication on the system’s linked geo-coded map.

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<sup>6</sup> See [http://www.sdr.gov/NDIS\\_rev\\_Oct27.pdf](http://www.sdr.gov/NDIS_rev_Oct27.pdf), pages 18-19, November 2000.

### **3.2.23 Trained Operators**

All system users, including emergency telephone notification system users, shall be trained in the proper use of TTY/TTD equipment, as well as receive training in issues surrounding the Americans with Disabilities Act, interacting with members of the deaf and/or hearing impaired community, and understanding the nuances in communicating with the deaf/hearing impaired.

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## 3.3 INFORMATION SYSTEMS AND SUPPORT

This section describes the major maintenance and support mechanisms that an agency should consider when purchasing an Emergency Telephone Notification System. It does not contain detailed communication protocols and other purely technical information for the operation and/or interoperability of these systems.

### 3.3.1 Customer Data

The ETNS shall provide mechanisms for customer data to be regularly updated by appropriate means (e.g., manual updates, file transfers, file replacements) without incurring functional or operational downtime.

#### Commentary

ETNS customer database update frequency should be set by the host agency administrator via written administrative procedures, and in direct consultation with the local telephone service provider and the ALI database provider (usually the telephone company). Update frequency can be determined by measuring the impact (in percent of changes) the telephone number daily database's moves, adds, and changes (MACs) has on the locally listed and unlisted telephone number database. The greater the percent of change, the more frequently the ETNS system database should be updated. For instance:

Industry research indicates that the E9-1-1 database changes at the rate of approximately 0.4 percent every single day, or the equivalent of approximately 4.2 million households each day getting new telephone service, relocating existing services, changing telephone numbers or disconnecting their telephone service.

The frequency of updates of the 9-1-1 database extracts is often set by state tariff and thus, is not a part of the recommendation. However, any agency that purchases an ETNS system should be aware of the need for current and accurate telephone number data. The user agency is principally responsible for the procurement and maintenance of local and regional telephone number information within their jurisdiction (unless otherwise specified in maintenance contracts, professional services contracts or other agreements).

### 3.3.2 Data Maintenance

Emergency Telephone Notification Systems (ETNS) information – including pre-defined events, scripts, and other contact information - may reside in an appropriate data base structure, as best suits the ETNS operator (private or public entity).

Data shall be locatable by agency name, community name, operator name/ID, PSAP ID, responding agency name, event type, dispatch record/incident number (if any) and name of jurisdiction(s) involved. Locating data by a telephone subscriber's name may violate the privacy requirements for unlisted telephone numbers and thus, must be done with appropriate security controls and audit mechanisms intact.

### **3.3.3 Mapping Data**

Emergency telephone notification systems that are integrated with geographic information systems/mapping systems shall use the most current and comprehensive geo-coded map database available for their region(s). Map information accuracy shall be such that:

1. The mapping system shall be able to convert latitude and longitude data for a specific geographic point into a street name. Optionally, the converted latitude and longitude query may also contain the two (2) nearest cross streets to the queried location.
2. The mapping system shall be able to isolate a single address on a street and be directed to call surrounding homes and businesses without contacting the isolated/targeted address.
3. The user agency (public or private entity) shall obtain periodic updates of map data from the map database supplier, as appropriate for the area.

#### **Commentary:**

Having out-of-date map data may prevent the ETNS system from locating and notifying locations that are new to the map. This might result in incomplete or inconsistent notification coverage. Individual states or jurisdictions may require the use of mapping data already available from state agencies responsible for maintaining GIS information.

### **3.3.4 Considerations Where State Law Prohibits the Use of 9-1-1 Data for Notification**

The availability and use of pre-existing 9-1-1 telephone number database for the purpose of emergency notification is subject of state law<sup>7</sup>. An agency or PSAP operating in states where the use of the area's 9-1-1 telephone number database is legislatively prohibited

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<sup>7</sup> Many have interpreted the Wireless Communications and Public Safety Act of 1999 as authorizing/allowing the use of a 9-1-1 database "to providers of information or database management services solely for purposes of assisting in the delivery of emergency services in response to an emergency."<sup>7</sup>



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for use with ETNS systems must acquire their telephone number data from alternate sources.

Regardless of the alternate source, the agency should have a process for understanding how accurate is the data they acquire. This could involve regularly “scrubbing” the host agency acquired data against the known 9-1-1 telephone number database and determining the percent of accuracy between the two databases (with the 9-1-1 database being the more accurate). Ideally, a 100% match is desirable. Anything less than 99.0% accuracy should be considered unacceptable.

**Commentary:**

The intent of this standard is to emphasize the importance of the data that drives any system, in this case the ETNS system. The source of this information ideally should be independent of the vendor of the System. Generally, commercially available data comes from only one primary source, the white pages, as well as some secondary sources (e.g. direct marketing lists) and coverage or location information can have significant holes. State and national “do not call” lists can significantly impact the accuracy and reliability of commercially acquired data.

**3.3.5 Confidential Information**

Because of the sensitive nature of the contact information contained in an emergency telephone number database, all information access will be secure and password-protected. All users shall take necessary precautions to maintain appropriate personnel and technology controls are in place in relation to the emergency telephone notification system.

The ETNS system shall also provide sufficient mechanisms to audit and report on individual user accesses to the database of telephone numbers, contact lists and other recipient/target information.

**3.3.6 Contact Lists**

Contact lists should preferably be maintained by the emergency telephone notification system. At a minimum, contact information should include name and primary phone number, a secondary phone number, and a back-up secondary number.

**3.3.7 Recording Emergency Event Data**

The following communications shall be logged and stored in such a manner that they can be retrieved by a number of reference keys to any emergency telephone notification system event.

Both the data and voice elements of any emergency event activation shall be recorded. All visible data on the emergency telephone notification system monitoring screen during the handling and processing of the emergency event shall be recorded. Outgoing call data (messages, scripts, etc) and voice elements shall be recorded.

A means for linking the voice and data portions of each call shall be available, so a complete and accurate record of each emergency event may be heard and displayed for review post event.

### **3.3.8 Data Retention and Retrieval**

All emergency telephone notification system event information shall be retained for a period of at least three years after the activation and conclusion of the emergency event (whichever is greatest).

Event information shall be available on-line for a minimum of thirty (30) days. After 30 days, event history and related information may be archived to tape, or some other stable medium. Archived data shall be maintained for at least three (3) years.

In no event will any system user, including the system administrator, be able to alter, after the event, an emergency telephone notification occurrence or sequence in relation to an event activation using an emergency telephone notification system. All ETNS records shall have “write once/read many” attributes.

### **3.3.9 Operator Intervention**

The ETNS system must provide the operator with the ability to stop, pause and terminate an in-progress emergency telephone notification activation. All actions by the operator – including start, stop, pause, continue, and terminate - shall be date and time-stamped in the event activation audit trail.

#### **Commentary:**

The intent of this standard is to provide the user with full flexibility in using and interacting with the ETNS system, as well as full accountability with regard to his/her actions with the system.

### **3.3.10 Playback from Archive**

Emergency telephone notification systems shall have the ability to play back event activations initiated by the system for post event review and assessment (i.e., after action analysis). If the emergency telephone notification system is linked to a geo-coded map, the system may provide visual indication on the linked system map of how the event “played-out” from initiation to conclusion.

### **3.3.11 Records**

The system administrator of an emergency telephone notification system shall implement appropriate privacy and security controls for any ETNS system record, and at minimum will include:

1. Guidance on physical security and controlled, rules based access to databases, contact lists and other files associated with the ETNS system, and
2. Procedures for the authorized release of records relative to an ETNS activation and affected databases and subscriber lists associated with the specific event in question.

### **3.3.12 Unique Event Numbering System**

The emergency telephone notification system shall be capable of generating a unique event or activation number (i.e., case number, incident number) associated with a single emergency activation event, regardless of the size or duration of the event. Such unique event numbers will be independent of, but cross referenced to, computer aided dispatch incident numbers, offense report numbers and other sequentially based numbering systems related to the agency's information, investigative or command and control operations.

#### **Commentary:**

The intent of this standard is to ensure a complete audit trail exists for each event, including information not normally stored in/on an ETNS system. It may also be necessary for an emergency activation event to occur without having a prior investigative event or other incident of concern (escaped prisoner, missing child, etc).

## **3.4 FACILITIES AND SUPPORT SYSTEMS**

### **3.4.1 Facilities and Equipment**

An Emergency Telephone Notification System vendor shall offer 24X7X365 technical and operational support provided by properly trained and experienced staff. The emergency telephone notification system should provide the following:

1. Geographic redundancy of all critical components (e.g., CPU, database, line cards, mapping systems)
2. Multiple and diverse means of system activation access which may include, but are not limited to the telephone, dedicated computer console, Internet and PDAs, 24 hours a day, 365 days of the year.
3. System monitoring
4. Sufficient testing of system data and components to ensure system performance and uptime requirements are met.
5. Diverse long-distance carriers and circuits.

### **3.4.2 Electrical Power**

Facilities housing the emergency telephone notification system shall be supported with continuously available electrical power for its mission-critical operations. This includes the provisioning of back-up power to all critical system components including individual workstations, with UPS units and/or stand-by generator power to all communications and command and control/mission-critical systems.

#### **Commentary:**

ETNS system administrators are encouraged to work with agency information technology (IT) and engineering support staff to determine the electrical power back-up systems configuration requirements appropriate to their operations.

### **3.4.3 System Redundancy**

An ETNS system should include back-up systems, failover procedures, and testing methods to ensure a high level of availability<sup>8</sup>.

### **3.4.4 Software Back Ups**

Scheduled data back ups to stable media shall be made by the emergency telephone notification system operations center or system administrator In accordance with best practices of computer system administration. Archived incident data shall – at minimum – be stored in a secure facility.

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<sup>8</sup> NENA recognizes that system costs increase considerably the more “redundant” a system is made. Individual communities should evaluate their ETNS functional needs and risks when specifying a system designed to meet community needs balanced against their financial capability.

### **3.4.5 Data Security**

The ETNS operators and administrators shall exercise best practices to restrict access to private telephone number data to only authorized system users. ETNS operators and administrators shall also exercise reasonable cautions to prevent customer and event history databases from being corrupted or overwritten.

### **3.4.6 Disaster Recovery**

The emergency telephone notification system shall have a disaster recovery plan addressing a range of potential events common to their geographical setting, including the transfer of emergency notification procedures and capabilities from the PSAP or hosted facility call center (for example) to an alternate location (neighboring PSAP, stand-by facility, alternate/stand-by position).

#### **Commentary:**

It is strongly recommended that the ETNS system administrator work cooperatively with the region's emergency management professionals and develop contingency plans applicable to the geographic area (i.e., common natural and man-made events) that could impact the ability of the ETNS host facility to support operations (i.e., flooding, earthquakes, tornadoes, hurricanes).

### **3.4.7 Systems Test**

Regularly scheduled tests shall be conducted on all emergency telephone notification systems. Elements to be tested include, but are not limited to:

1. Emergency power systems, including uninterruptible power supplies (UPS) with alarm,
2. Mapping systems,
3. Telephone switch,
4. Databases,
5. Message recording system
6. Calling platform
7. Critical systems applications and
8. Associated workstation hardware and support equipment.

Staff performing any of the foregoing tests shall record testing results in a common journal or other maintenance database.

### **3.4.8 Systems Test Exercises for Public**

The ETNS system administrator shall develop procedures to perform an annual test of the installed emergency telephone notification system.

Such tests should be carefully planned in advance, involve multiple response and coordination agencies, and involve the active participation of local telephone service providers and telephone company (telco) database administrators.

**Commentary:**

Systems Test Exercises for the public are useful during periods of heightened awareness (e.g. flash flood threats during spring runoffs, seasonal threats). If periodic test exercises using the ETNS system to call subscribers in affected areas are possible, subscribers become more aware of the manner in which real ETNS calls would be made to provide warnings for them. Similarly, problems with notification of subscribers during tests can result in procedural or technical changes that forestall real failures during true emergencies. Some costs may be associated with such tests but sometimes the ETNS provider may host limited test calls gratuitously as a public service.

**3.4.9 Physical Security**

Access to the emergency telephone notification system shall be limited to only authorized personnel. Such protective measures shall be taken to restrict unauthorized access to the ETNS workstations and system components (access control, user ID and password, etc).

**3.4.10 Access to Critical Information**

Authorized Users shall have continuous access to all ETNS components, including emergency contact lists, event activation lists, security codes and other information essential to the successful activation, management, oversight and completion of an emergency telephone notification event.

**3.4.11 Computer Systems**

All ETNS computer systems and other programs shall be properly licensed for agency, PSAP, or call center use and used according to applicable copyright statutes.

**3.4.12 Virus Protection/Firewall Protection**

All ETNS and mission critical computer systems shall be equipped with current anti-virus programs (i.e., Norton Anti-Virus – example only). Technical support personnel shall ensure that all relevant computer software virus definitions are installed on all call center agent workstations and other call center computer equipment.

All ETNS and mission critical computer systems/networks shall be equipped with computer firewall protection software that protects connected call center workstations, customer premise equipment (CPE) and networks from, among others things, computer hackers and denial of service (DoS) attacks. Ideally, any firewall protection software deployed should preferably include intrusion detection, content filtering (entire domains or web sites), domain name caching, and advertisement blocking (i.e., banner ads) capabilities.

### **3.4.13 Technical Support**

Technical support must be available 24x7x365. Mission critical system components must be identified and service escalation procedures must be defined by the vendor for the user agency. Minimally, escalation contact information shall include:

1. Complete vendor contact name and position in the company,
2. Escalation level,
3. Voice telephone number
4. Fax telephone number
5. Email address, and
6. Corporate mailing address

#### **Commentary:**

It is the responsibility of the vendor to notify customers/clients of any changes or modification to their service escalation model.

### **3.4.15 Technical Support Documentation**

Appropriate written procedures establishing proper control over the unauthorized installation, removal, upgrade, or downloading of computer software and/or computer files shall be developed and distributed to all personnel. Documentation shall be reviewed not less than annually and updated accordingly.

### **3.4.16 Internal Information Systems**

The user agency (PSAP, call center, etc) shall establish appropriate written policies regarding access to and use of the Emergency Telephone Notification system. Further, ETNS agency management shall outline written policies and procedures for the following minimum characteristics:

1. Expectations of privacy of telephone number and incident data,
2. Approved uses of the ETNS,
3. Prohibited uses for the ETNS and its data, and
4. A scheduled periodic review of operations by management

### **3.4.17 Inspection Compliance**

The ETNS host agency shall establish written procedures for inspection of emergency telephone notification computer systems and data for user access violations and inappropriate use of equipment and/or company and/or customer information. Compliance inspections shall be conducted at least semi-annually with a written report delivered to management. Compliance reports should be maintained for at least three (3) years (or per the agency's records retention schedule).

### **3.4.18 ETNS Contingency Plan**

The PSAP/call center shall publish and make available to all personnel an ETNS system operations contingency plan in the event of unusual occurrences that prevent the ETNS system from being used. At minimum, the plan should address:

1. Availability and location of current plan
2. Periodic (e.g. quarterly) review of plan
3. Plan Update procedures
4. Periodic testing
5. Alternate location and transportation to relocation center.
6. PSAP/call center security

Also, the ETNS contingency plan shall provide appropriate guidance to personnel if any of the following circumstances are encountered:

1. Loss of electrical power
2. Loss of computer systems
3. Loss of telephone systems
4. Loss of individual call center computer workstations
5. Loss of partial or complete communications facility
6. Relocation of call center personnel to other facilities

### **3.4.19 Common Time Sync Device**

The ETNS computers, workstations, mapping systems and other associated equipment (as appropriate) shall be linked to a continuous synchronized time service such as the Network Time Protocol (NTP), or be connected to PSAP/call center equipment by way of a common device (e.g., Netclock – used for example only).



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## 3.5 TRAINING

The following training standards shall be applicable to emergency telephone notification system operations and support personnel.

### 3.5.1 Initial Training

All system users shall be supplied emergency telephone notification system training manuals provided by the vendor or service provider specifically addressing their areas of responsibility (e.g., system user, system supervisor, system administrator, database administrator).

Personnel shall be trained and should preferably be tested to demonstrate proficiency in key performance areas in relation to proper use of an emergency telephone notification system. Minimally, personnel shall receive training in:

1. Operation of all workstation equipment, including computer systems and telephone equipment
2. Proper use of all mission-critical support applications, including mapping programs, databases, and dispatching programs
3. Disaster recovery/activation plans
4. Appropriate situations for use of the ETNS
5. Inappropriate use of ETNS data

### 3.5.2 Continuing Education

Skills enhancement training shall be conducted in a timely manner as changes are made to system operations, as new technology is introduced in the user's workspace, and as other changes are implemented (software upgrades, revised procedures, etc).

Regardless of the frequency and/or type of training provided (i.e., initial, specialized, ongoing, roll call), ETNS system administrators/managers shall ensure that ANY training provided is appropriately documented in the individual agent's personnel or training file.

#### **Commentary:**

Documentation elements should preferably include training topic, delivery method (roll call, CBT, etc), instructor name, any grades or evaluations related to the delivered training, and remedial actions taken by management to assist the user master the material or required task (if warranted).

### **3.5.3 Curriculum Required**

The ETNS agency shall develop a training curriculum specifically addressing the emergency telephone notification system of a length and duration deemed appropriate for proper operation and use of the system. Training elements shall include information contained in vendor and/or telephone or service provider supplied user manuals and other information deemed appropriate to accomplish specified training objectives (i.e., scripts, tutorials, drills).

### **3.5.4 Management and Administrative Personnel**

Emergency Notification System support staff, including management and administrative support personnel and system supervisors, shall be trained in the following performance areas:

1. Proper operation of their site's emergency telephone notification system.
2. Disaster recovery plans for their host facility
3. Impact of improperly referred requests for public safety response requests

Additionally, supervisors and senior management may also be trained in the following processes, if appropriate:

1. System back up procedures
2. Research and retrieval of on-line and archived data

### **3.5.5 ETNS Project Manager**

The ETNS PSAP system administrator shall appoint a project manager who is responsible for representing the PSAP (or user agency) in all meetings, conference calls and such, as well as being responsible for the following activities relating to the planning, implementation/installation, and maintenance of the Emergency Telephone Notification system:

1. Act as single point of contact for ETNS vendor during planning, installation and maintenance of ETNS system
2. Coordinate training sessions of all PSAP personnel
3. Act a principal point of contact with the agency's local telephone service provider
4. Coordinate personnel functional competency activities
5. Develop customer service and maintenance/support escalation procedures
6. Develop policies and procedures associated with ETNS system implementation

## 4.0 References

The Wireless Communications and Public Safety Act of 1999, also called Public Law 106-81, dated October 26, 1999. See [http://www.nena.org/PR\\_Pubs/PressReleases/S-800%20Passes%20House%2010-13-99.PDF](http://www.nena.org/PR_Pubs/PressReleases/S-800%20Passes%20House%2010-13-99.PDF) for additional information. Also, see the Federal Communications Commission FCC NEWS, dated August 29, 2000, at [http://www.fcc.gov/Bureaus/Wireless/News\\_Releases/2000/nrw10029.html](http://www.fcc.gov/Bureaus/Wireless/News_Releases/2000/nrw10029.html) for additional information concerning the adoption of 9-1-1 as the “universal emergency number”.

The United States Department of Homeland Security, July 2002 Report titled *National Strategy for Homeland Security*  
See [http://www.whitehouse.gov/homeland/book/nat\\_strat\\_hls.pdf](http://www.whitehouse.gov/homeland/book/nat_strat_hls.pdf) for more information.

## **5.0 Exhibits**

**NONE**

## **GLOSSARY**

### ***9-1-1***

A three digit telephone number to facilitate the reporting of an emergency requiring response by a public safety agency.

### ***9-1-1 Administrator***

The administrative jurisdiction of a particular 9-1-1 system. This could be a count/parish or city government, a special 9-1-1 or Emergency Communications District, a Council of Governments, an individual PSAP or other similar body.

### ***9-1-1 Service Area***

The geographic area that has been granted authority by a state or local governmental body to provide 9-1-1 service.

### ***Alternate PSAP***

A PSAP designated to receive calls when the primary PSAP is unable to do so.

### ***All Circuits Busy (ACB)***

A telephone line state that informs the caller that all available telephone lines are in use.

### ***Attendant Position***

The Customer Premises Equipment (CPE) at which calls are answered and responded to by the Telecommunicator.

### ***Automatic Collision Notification (ACN)***

The process of identifying that a motor vehicle has been involved in a collision, collecting data from sensors in the vehicle, and communicating that data to a Call Center or PSAP.

### ***Backup Public Safety Answering Point (PSAP)***

Typically a disaster recovery answering point which serves as a backup to the primary PSAP and is not co-located with the primary PSAP.

### ***Baudot Code***

A five bit encoding scheme developed for Telex transmission that represents text, numerals, punctuation, and control signals. It is the standard transmission signaling scheme used by TTY (TDD) devices. (per EIA PN-1663)

***Call Back***

The capability to re-contact the calling party by their telephone number.

***Call Relay***

Forwarding of pertinent information by a PSAP attendant to the appropriate response agency (Not to be confused with Telephone Relay Service).

***Call Routing***

The capability to selectively route the 9-1-1 call to the appropriate PSAP.

***Call Transfer***

The capability to redirect a call to another party.

***Case Number***

Tracking number used to reference recorded incidents and events. Related nomenclature: Call number, Report number, Incident number, Report number.

***Cell***

The wireless telecommunications (Cellular or PCS) antenna serving a specific geographic area.

***Cell Sector***

One face of a cell antenna (typically 3-sided) that operates independently of the other sectors.

***Cell Site***

The location of a cell and related equipment.

***Central Office (CO)***

A key switching component of the public switched telephone network. A CO provides telephone service (dial-tone) to a specific geographic area.

***Computer Aided Dispatch (CAD)***

A computer based system which aids PSAP telecommunicators by automating selected dispatching and record keeping activities.

***Conference Transfer***

The capability to bridge a third party onto an existing call. Also known as three-way calling.

***Consolidated PSAP***

A facility where one or more Public Safety Agencies choose to operate as a single 9-1-1 entity.

***Customer Premises Equipment (CPE)***

Communications or terminal equipment located in the customer's facilities – Terminal equipment at a PSAP.

***Data Base***

An organized collection of information, typically stored in computer systems, comprised of fields, records (data) and indexes. In 9-1-1, such data bases include MSAG, telephone number/ESN, and telephone customer records.

***Data Base Management System (DBMS)***

A system of manual procedures and computer programs used to create, store and update the data required to provide Selective Routing and/or Automatic Location Identification for E9-1-1 systems.

***Disaster***

Any event which can cause a significant disruption to emergency calling capability.

***Disaster Recovery***

A specific set of procedures designed to reduce the damaging consequences of unexpected events resulting in the loss of 9-1-1 capabilities.

***Emergency Alert Systems (EAS)***

Radio or television based broadcast of emergency event information.

***Emergency Call***

A telephone request for public safety agency emergency services which requires immediate action to save a life, to report a fire or to stop a crime. May include other situations as determined locally.

***Emergency Medical Service (EMS)***

Fire, hospital, poison control, etc. response centers.

***Emergency Telephone Notification Systems (ETNS)***

Specific category for a system that uses the telephone - in conjunction with other elements - including computer hardware and software to notify persons of an emergency.

***Emergency Notification Systems (ENS)***

General category for any systems used to notify persons of an emergency. May include changeable message signs, sirens, telephone and other media.

***Environmental Services Research Institute (ESRI)***

Software developer of geographical information system (GIS) software and technology.

***Health Insurance Portability and Accountability Act (HIPAA)***

Federal regulation protecting patients from unauthorized disclosure of medical information.

***Incident Commander***

Title that identifies the individual responsible for a specific incident or event.

***Instant Call Recorder***

A device that allows the user to instantly playback all (or portions of) a call for service to clarify or validate what was heard by the operator to what was said by the caller. Also called an Instant Recall Recorder.

***Location Determination Technology (LDT)***

A system which computes the x and y coordinates of a wireless 9-1-1 caller.

***Logging Recorder***

A voice-band audio recorder that records to and plays from a permanent storage media such as tape or disk. Logging recorders are typically multi-channel so as to simultaneously record from several sources.

***Management Information System (MIS)***

A program that collects, stores and collates data into reports enabling interpretation and evaluation of performance, trends, traffic capacities, etc.

***Master Clock***

An accurate timing device that generates synchronization signals to control other clocks or equipment. (Ref. NENA 04-002)

***Multi-Line Telephone System (MLTS)***

A system comprised of common control unit(s), telephone sets, and control hardware and software. This includes network and premises based systems. i.e., Centrex and PBX, Hybrid, and Key Telephone Systems owned or leased by governmental agencies and non-profit entities, as well as for profit businesses.

***National Emergency Number Association (NENA)***

The National Emergency Number Association is a not-for-profit corporation established in 1982 to further the goal of “One Nation-One Number.” NENA is a networking source and promotes research, planning and training. NENA strives to educate, set standards and provide certification programs, legislative representation and technical assistance for implementing and managing 9-1-1 systems.



***Not In Service (NIS)***

A telephone line state that informs the caller that the number dialed is no longer in service.

***Personal Digital Assistant (PDA)***

Small, handheld device used to store address book information, telephone numbers, personal contacts and other personal information.

***Phonetic Alphabet***

Words and names used to clarify the letter used. (Example: A=alpha or Adam, B=bravo or boy).

***Primary Public Safety Answering Point (PSAP)***

A PSAP to which 9-1-1 calls are routed directly from the 9-1-1 Control Office.

***Private Branch Exchange (PBX)***

A private telephone network used within a common area (i.e., building, apartment, campus). Users of the PBX share a certain number of *outside lines* for making telephone calls external to the PBX.

***Public Agency***

A state or any unit of local government or special purpose district located in whole or in part within a state, which provides police, fire-fighting, medical or other emergency services or has authority to do so.

***Public Safety Agency***

An entity that provides fire fighting, law enforcement, emergency medical or other emergency service.

***Public Service Announcement (PSA)***

Announcement of events, emergency information and other public interest information on public and private media (radio, television, print) at no cost to the requesting agency (usually).

***Public Switched Telephone Network (PSTN)***

The public switched telephone network.

***Quality Assurance Program***

System that facilitates review and evaluation of work product. Information is used to validate effectiveness of training and evaluate need for additional training or other corrective action.

***Real-Time***

The availability of information at the exact time it is occurring.

***Recall Recorder***

A voice-band audio recorder that records to and plays from a media that may not be permanent (such as tape loop, fixed disk or RAM). Recall recorders are typically associated with each operator position for the purpose of recording and playing back their most recent conversations. Also known as Call Check or Instant Playback Recorder.

***Redundancy***

Duplication of components, running in parallel, to increase reliability; A backup system (either a device or a connection) that serves in the event of primary system failure.

***Response Agency***

The public safety agency having legal or consensual obligation to respond to a call for service.

***Secondary PSAP***

A PSAP to which 9-1-1 calls are transferred from a Primary PSAP. (See PSAP)

***Telecommunications Relay Service (TRS)***

A federally mandated service provided by states that provides communication relay between TTY users and voice telephone users, via a third party, for communications assistance.

***Telecommunicator***

As used in 9-1-1, a person who is trained and employed in public safety telecommunications. The term applies to call takers, dispatchers, radio operators, data terminal operators or any combination of such functions in a PSAP.

***Teletypewriter (TTY)***

A device capable of information interchange between compatible units using a dial up or private-line telephone network connections as the transmission medium. ASCII or Baudot codes are used by these units. (per EIA PN-1663)

***Voice over Internet Protocol (VoIP)***

A technology for transmitting voice, such as ordinary telephone calls, over packet-switched data networks. Also called IP telephony.

***World Wide Web***

The public internet.

***X,Y***

Shorthand expression for coordinates that identify a specific location in two dimensions representing longitude (X) and latitude (Y).

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## Acronyms

ACB	All Circuits Busy
ACN	Automatic Collision Notification
ADA	Americans with Disabilities Act
ALI	Automatic Location Identification
ANI	Automatic Number Identification
CAD	Computer Aided Dispatch
CCH	Computerized Criminal History
CPE	Customer Premises Equipment
CO	Central Office
CPN	Calling Party's Number
DBMS	Data Base Management System
EAS	Emergency Alert Systems
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
ENS	Emergency Notification Systems
ESP	Emergency Services Provider
ESRI	Environmental Services Research Incorporated
ETNS	Emergency Telephone Notification System
GIS	Geographic Information System
GPS	Global Positioning System
HIPAA	Health Insurance Portability and Accountability Act
ICS	Incident Command System
ICR/IRR	Instant Call Recorder/Instant Recall Recorder
MDC	Mobile Data Communications
MDT	Mobile Data Terminal
MLTS	Multi-Line Telephone System
NCIC	National Crime Information Center
NIS	Not In Service
PBX	Private Branch Exchange
PDA	Personal Digital Assistant
PSA	Public Safety Agency
PSA	Public Service Announcement
PSAP	Public Safety Answering Point or Primary Public Safety Answering Point
PSTN	Public Switched Telephone Network
TDD	Telecommunication Device for the Deaf
TTY	Teletypewriter
TN	Telephone Number
UPS	Uninterruptible Power Supply
VoIP	Voice over Internet Protocol
WWW	World Wide Web