NENA Information Document for Handling Text-to-9-1-1 in the PSAP

NENA Information Document for Handling Text Message Calls to 9-1-1 in the PSAP

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Prepared by:
National Emergency Number Association (NENA) PSAP Operations Committee, Text Message Working Group

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National Emergency Number Association
1700 Diagonal Rd, Suite 500
Alexandria, VA 22314
202-466-4911
or commleadership@nena.org

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The National Emergency Number Association (NENA) PSAP Operations Committee, Text Message Working Group developed this document.

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Members:	Employer
John Haynes, PSAP Operations Committee Co-Chair	Chester County, PA
Wendi Lively, PSAP Operations Committee Co-Chair	Spartanburg County Communications/9-1-1, SC
Lisa Dodson, WG Co-Chair	Harris County, TX
Sandy Beitel, WG Co-Chair	Ogle County, IL
Sherri Griffith-Powell	L.R. Kimball
April Heinze	Eaton County Central Dispatch, MI
Brandon Gott	Sprint
Fran Self	Palm Bay Police Department, FL
Gina LaRocca	Southeast Regional Planning Commission
Melissa Tutton	Plano Public Safety Communications, TX
Rob McMullen, ENP	Vigo County 9-1-1, IN
Terry Whitham	Delaware State Police, DE

This working group also thanks Pete Eggimann and Jim Shepard, Development Steering Council Co-Chairs; Roger Hixson, Technical Issues Director; and Ty Wooten, Director of Education and Operational Issues Director.

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1 Executive Overview

The NENA Information Document (INF) for Handling Text-to-9-1-1 in the PSAP is intended to provide a guideline for PSAPs with recommendations for emergency calling to 9-1-1 using text messaging.

With today's expanding technology, people have increased options for communication methods to the PSAP. People are using advanced telecommunications methods, both for peer-to-peer communications and for emergency calling. These newer methods of communication include, but are not limited to, wireless devices, videophones, video cameras, computers, and instant messaging technologies. The range of options will make it possible for people to contact PSAPs for any given emergency circumstance and request assistance via his or her communication preferences.

The use of non-voice communications such as texting, in particular SMS, has exploded and citizens have come to rely on this technology in their day-to-day communications. However, the current E9-1-1 system was never designed to handle non-voice communications. There will be several challenges to overcome in developing this new technology into an end-to-end service that is capable of providing all the features and functionality of the E9-1-1 system. Services such as the routing of messages to the correct PSAP, timely delivery of messages and providing device location to the PSAP are currently not widely available in today's networks.

1.1 Purpose and Scope of Document

Today's growth in the consumer's use of emerging communications technologies is enabling the creation, the dissemination, and the receipt of information from a variety of sources. Consumers and businesses are increasingly dependent upon new communication technologies and devices. According to information provided by CTIA-The Wireless Association®, as of December 2010, 270 million data-capable devices, including 78.2 million smart phones or wireless-enabled PDAs and 13.6 million wireless-enabled laptops, notebooks, tablets or wireless broadband modems, are in the hands of United States consumers. Further, there are 302.9 million wireless devices in the United States which equals approximately 96% of the population. With that is the understanding that communication services are evolving, and new devices and services are being rolled out regularly.

These rollouts include not only faster devices but a significant number of data services such as text messaging, gaming, streaming video and the downloading and transferring of pictures. According to a study conducted by the CTIA-The Wireless Association®, U.S. wireless consumers used more than 2 trillion minutes the 12 months ending December 2010 (or 6 billion minutes per day) and more than 2 trillion text messages were sent and received (or 6 billion text messages per day). With this increase in content volume, there is a growing assumption, particularly with younger adults, that they will be able to reach 9-1-1 using something as simple as a text message.

As the ever-changing evolution of technology is advancing, it introduces numerous challenges in processing the new means of communication for emergency services.

The nation's telecommunicators have done an excellent job in processing verbal 9-1-1 calls for service. Non-verbal communications will establish additional challenges to overcome when it comes to processing additional data.

With that comes unique challenges in the validity of the 9-1-1 call along with the proper format in processing the data stream. This document will address those issues and offer proper guidelines in processing 9-1-1 calls for service.

1.2 Reason to Implement

As Next Generation 9-1-1 becomes a reality, we must be prepared to process new types of 9-1-1 calls. Our telecommunicators will be accepting new means of communication via text messaging. An operational guideline must be established on how to process and archive this information.

A new form of communication with 9-1-1 will be established with text messaging. Text-to-9-1-1, along with the challenges of a new type of communication with our society, will become commonplace. This creates a new learning curve for telecommunicators in the form of lingo and abbreviations.

This will place an additional strain on telecommunicators. We need to be proactive on how this will affect our operations and impact personnel. This document addresses those issues and offers assistance.

2 Introduction

2.1 Operations Impacts Summary

With the implementation of Text-to- 9-1-1, PSAPs will experience a new method of receiving and process requests for emergency services. This will require PSAPs to develop operational policies for managing these requests as well as incorporate new techniques into telecommunicator training curriculum. This technology may create new, possibly additional, tasks for telecommunicators that will impact a PSAPs current operations. PSAP management should identify, review and address all potential operational impacts prior to texting being made available in their community.

2.2 Technical Impacts Summary

This NENA Information Document has been developed to provide recommendations to PSAPs for handling Text-to-9-1-1. These recommendations make certain assumptions regarding the technical capabilities of a Text-to-9-1-1 solution and the features available to a PSAP upon delivery of the text, including:

- The ability of a PSAP to receive a text to 9-1-1 message
- Routing of text messages to the appropriate PSAP
- Routing of mis-routed text messages
- Delivery of texter's location and a callback number

2.3 Security Impacts Summary

Not Applicable

2.4 Document Terminology

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

2.5 Reason for Reissue

NENA reserves the right to modify this document. Upon revision, the reason(s) will be provided in the table below.

Doc #	Approval Date	Reason For Changes
NENA-INF-007.1-2013	10/09/2013	Initial Document

2.6 Recommendation for Additional Development Work

This document has been established to provide support to PSAPs when interfacing with Text-to-9-1-1 related to an emergency incident. There may be a need for development of additional operations or technical standards as a result of this OID.

2.7 Date Compliance

All systems that are associated with the 9-1-1 process shall be designed and engineered to ensure that no detrimental, or other noticeable impact of any kind, will occur as a result of a date/time change up to 30 years subsequent to the manufacture of the system. This shall include embedded application(s), computer-based or any other type application.

2.8 Anticipated Timeline

Full implementation of the recommendations presented in this informational document are dependent on the availability of Text-to- 9-1-1 technology in a PSAP's service area. 9-1-1 entities should work with the providers in their respective areas to determine availability and develop a deployment timeline. The four (4) largest carriers, Verizon, AT&T, T-Mobile and Sprint have committed to providing an interim solution for this technology by May 2014. In preparation for deployment, there are recommendations available to PSAP administrators in this document that will help prepare the PSAP such as a call traffic study to determine required staffing levels as well as development of training for telecommunicators. A public education program should also be developed prior to deployment of any solution to ensure a smooth transition in offering this new service to the community.

2.9 Cost Factors

With the implementation of this new technology, there may be some potential fiscal impact to PSAP operations. This INF provides recommendations for incorporating new procedures into existing agency policies as well as additional training for telecommunicators. PSAP management should review these recommendations to determine if implementing text messaging will require additional funding to meet demands for additional services.

2.10 Cost Recovery Considerations

Normal business practices applicable to the local PSAP or 9-1-1 administrative entity shall be assumed to be the cost recovery mechanism.

2.11 Additional Impacts (non cost related)

The information or requirements contained in this NENA document are expected to have both 9-1-1 technical and 9-1-1 Center operations impact, based on the analysis of the authoring group. At the date of publication of this document, development has started on Text-to-9-1-1 trials in specific regions of the country with different wireless carriers. Additional analysis may be necessary to determine if there are any non-cost related impacts that were not considered during the development of this document once information is made available as a result of the trial systems.

2.12 Intellectual Property Rights Policy

NENA takes no position regarding the validity or scope of any Intellectual Property Rights or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; nor does it represent that it has made any independent effort to identify any such rights.

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Please address the information to:

National Emergency Number Association
1700 Diagonal Rd, Suite 500
Alexandria, VA 22314
202-466-3911
or commleadership@nena.org

2.13 Acronyms/Abbreviations, Terms and Definitions

Some acronyms/abbreviations used in this document have not yet been included in the master glossary. After initial approval of this document, they will be included. Link to the master glossary is located at http://www.nena.org/?page=Glossary.

The following Acronyms/Abbreviations are used in this document:		
Acronym	Description	(N)ew (U)pdate
APCO	Association of Public-Safety Communications Officials	U
ASL	American Sign Language	U
CAD	Computer Aided Dispatch	U

The following Acronyms/Abbreviations are used in this document:		
CPE	Customer Premise Equipment	U
CTIA	Cellular Telephone Industry Association	U
INF	Information Document	U
NAED	National Academies of Emergency Dispatch	U
NENA	National Emergency Number Association	U
NLETS	National Law Enforcement Telecommunications System	N
PDA	Personal Digital Assistant	U
PSAP	Public Safety Answering Point	U
SMS	Short Message Service	U

3 Text Messaging Description

3.1 Overview of Text Messaging

Text messaging, or texting, is a simple term for the sending of brief, electronic messages between two or more mobile phones or fixed or portable devices. While the most common implementation of text messaging is the use of short message service, or SMS, it also includes technologies such as instant messaging, social media messaging and third-party applications that provide texting capability but may or may not use a wireless carrier's network.

Text messages are not delivered to its recipient in the same manner as a voice call. Texting, and in particular SMS, was designed as a secondary service within a carrier's network while voice traffic remains the primary service. As a secondary service, it utilizes the carrier's signaling channels and other resources when they are not being used for voice calls, essentially storing the message until network resources are available, then forwarding the text message on to its recipient. This may cause a significant delay in the delivery of a Text-to-9-1-1 message to a PSAP. During periods of congestion, e.g. due to severe weather, a text message may be delayed by several minutes, or potentially hours. Additionally, PSAPs should be aware that texting is not a real-time two-way messaging service. When handling a 9-1-1 text message, communications can be delayed due to waiting for the message sender and PSAP call taker to acknowledge receipt of the message and respond.

The following are examples of the types of scenarios where text messaging might be used during a 9-1-1 incident:

- School violence event, i.e. active shooter
- Any event where the victim needs to remain silent, i.e. bank robbery, home invasion, domestic violence, or abduction

- Situations where audio telephone dialing is incapacitated, i.e. storm or disaster, where text messaging still works
- Those that request text only or do not talk on the phone
- Individuals who are deaf, deaf-blind, late deafened, hard of hearing or have speech disabilities

Factors that may influence the language used by a texter include age demographic, texting device capabilities, and regional lingo or language deficiencies.

The interim text solution is for SMS only, and the PSAP will have three (3) options of how they will receive SMS messages.

- Via TTY Interface
- Via Web Portal
- Via i3 Interfaces

Once a PSAP has determined which method will be used for delivering SMS, there will be several considerations for implementing SMS handling within the PSAP.

4 Text Messaging Recommendations

To initiate an emergency call to 9-1-1 using text messaging, the user would be utilizing a text enabled wireless device or computer, and entering 9-1-1, a short code, or a likeness thereof, as the number for the text message to be delivered. Once the text message has been delivered to the appropriate PSAP the following recommendations apply:

4.1 PSAP Management Considerations

1. Prior to accepting Text-to-9-1-1, a call traffic study should be conducted to benchmark current call volume to existing staffing levels. This data should then be used to plan for an incremental call volume growth with the introduction of Text-to-9-1-1, and a subsequent need for an increase in staffing. The typical duration for a text message to 9-1-1 may be considerably longer than a voice call to 9-1-1. In order to provide a comparable service level in regards to answer delay and call processing for text messages, it is important for PSAP managers to begin reviewing their potential staffing needs so that, if necessary, positions can be budgeted and allocated for within a reasonable amount of time of implementing texting to 9-1-1 in their community.
2. A technological assessment will also need to be conducted that takes into consideration the effect of text messaging on CPE in conjunction with other intensive applications such as CAD and NLETS.
3. When a PSAP makes the decision to accept Text-to-9-1-1, a training curriculum will need to be developed that addresses:
    a. Introduction to common texting lingo

i. Create an acronym list
ii. Encourage acronyms that are 9-1-1 specific
iii. Do not use emoticons, only language characters

b. Increased awareness in visual prompts or emoticons
c. Multi-tasking multiple texting sessions
    i. PSAP management should take into account all functions of the call taker / dispatcher
    ii. Determine maximum number of active sessions (recommended not to exceed three active sessions at one time)
    iii. Consider protocols that do not allow for the initiation of a text message conversation until an active 9-1-1 voice call is complete
    iv. Use of pre-programmed messages
        a. Greeting
        b. Fire protocols
        c. EMD protocols
        d. Police protocols
d. Implementation of additional incident qualifiers that will provide a more clear picture of the call for service:
    i. Find methods to take control of the conversation and situation at hand
    ii. Increase training in written communication vs. verbal
    iii. Develop techniques on how to be assertive with written communications
e. Determine a procedure to identify an abandoned text call that includes a call center pre-defined duration of no response (recommended not to exceed 15 minutes)
f. Location of stored information to be found for release of records associated with investigations or public release
g. Provides continued hands-on practice

4. A Public Education Program is highly recommended with the implementation of text messaging to the PSAP that continues to:

    a. Encourage the public to place a voice call to 9-1-1, if at all possible.
    b. Emphasize that text messaging calls should only be used in extreme situations where it is not possible to make a voice call such as:
        i. Domestic violence
        ii. Home invasion
        iii. School campus violence
        iv. Natural disaster
        v. Individuals who are deaf, deaf-blind, late deafened, hard of hearing or have speech disabilities
        vi. Any other situation where speaking out loud could put the citizen in further danger
    c. Iterate to the public those factors that may cause a text message to take longer to process than a voice call

i. A text needs to be typed
ii. The message needs to travel through the system
iii. The telecommunicator must read the text
iv. The telecommunicator must type a response
v. Texting is not always instantaneous
vi. Text messages may have length limitations (i.e. 160 characters) that may cause the message to be bifurcated or may cut off part of the message
vii. The text message may be delayed in being delivered to the PSAP
viii. There may be no acknowledgement that the PSAP has received the text message

d. In most instances text messaging does not carry location information; therefore it should be provided in the first text message requesting help
e. Text abbreviations or regional slang should never be used
f. Stress that a service provided within the boundaries of a particular agency may not be available in another (i.e. a neighboring city, county, or state)
g. Supply information on which carriers provide text to 9-1-1 service
h. Fees related to sending messages could apply based upon the individual device owner's service plan
i. Provide any additional information that may be specific to the text to 9-1-1 solution being utilized

4.2 Call Processing Considerations

1. All calls shall be prioritized, answered, and handled within the parameters of the NENA 9-1-1 Call Answering Standard 56-005.
2. The telecommunicators will need to continue with standard information gathering practices that include, at minimum:
    a. address or exact location of the incident,
    b. call back number,
    c. type of emergency
    d. time of occurrence
    e. hazards
    f. identity of those involved and their location.
3. If the telecommunicator experiences difficulty in processing a text message call, i.e. unable to understand the nature of the text message or needs additional assistance, then the telecommunicator should follow their agency's procedures for getting assistance, such as supervisor barge-in, if the PSAP's CPE accommodates this, or have another telecommunicator take over processing the text message call.
4. At the end of a text messaging session, either from a successful call or a non-responsive caller, the telecommunicator should send the message "END OF CALL" to indicate that the

telecommunicator is terminating the texting session. PSAPs should work with their local communities to educate them on text messaging procedures. For a non-responsive caller, it is recommended that the telecommunicator treat it as a silent call and it be handled within the parameters of the NENA 56-001 Operational Standard "Minimum Response to Wireless Calls". PSAPs should develop an agency policy for the dispatching of emergency responders to non-responsive callers.

5. If it is necessary to re-route a text messaging session to another PSAP due to the texter's location (i.e., a misroute) or the texter needs emergency services that are dispatched by a secondary agency, such as fire or medical services, a telecommunicator will text message the caller "Please stand by, connecting you with (NAME OF AGENCY)". It is recommended that the PSAP announce to the secondary agency that they are transferring an emergency request. Telecommunicators should follow agency procedures as to whether the announcement to the secondary agency is verbal, a text message or both. These procedures should also cover the necessary steps on how to handle a call in the event a PSAP that receives a text call needs to transfer to an agency that does not have similar technology. This capability may not exist with all interim solutions. The PSAP should verify with the local provider.
6. In the event that a text message includes a multimedia attachment, the telecommunicator should follow established agency procedures for getting assistance. It is recommended that an agency's procedures include procedures for getting assistance from a supervisor in the early stages of text messaging deployment to ensure that only information deemed necessary and appropriate is forwarded to first responders. Consideration should also be given to the implementation of training material and courses within the PSAP on how to process images and their potential use in the field.
7. If it is necessary to place an existing text messaging session into a queue to be processed further for any specialized reason (such as the need for language interpretation), the telecommunicator should follow their agency's established procedures for placing calls into queue and ensure that all call record information remains available for use in the future.
8. If a telecommunicator receives an initial text message that has been determined to be non-responsive, the telecommunicator should send a text message to the device to attempt to establish communications. If unsuccessful, it is recommended that the telecommunicator should contact the device to try to establish voice communications.
9. If the telecommunicator is unable to communicate with a texter due to a communications barrier, the telecommunicator should attempt to determine the most effective method for communicating with the texter. A communications barrier may include, but is not limited to, a foreign language, or texting lingo. Recommended procedures for overcoming a communications barrier are:

    a. *Are you able to place a voice call?* This would help the telecommunicator determine if the texter is deaf, deaf-blind, late deafened, hard of hearing or has speech disabilities. A telecommunicator may need to use recognized American Sign Language) grammar and syntax to effectively communicate with the texter. PSAPs should ensure that all

telecommunicators routinely receive refresher training on the use of ASL communications. A texter that is not hearing or speech impaired should be encouraged to place a voice call to 9-1-1 as long as the telecommunicator believes that the associated sounds with placing a voice call will not endanger the citizen.

b. *Can you use plain English words?* This would help determine if the communications barrier is due to the use of texting lingo that the telecommunicator may not understand, i.e., the texter may be a teenager.

c. *Do you understand English?* If the first two questions still yielded text that was not easily identifiable to the telecommunicator, this might help the telecommunicator determine that the texter is non-English speaking.

- ❖ If an agency employs bilingual telecommunicators, the telecommunicator should attempt to utilize those resources to communicate with the texter according to their agency policy.
- ❖ Currently, technology does not exist to allow a telecommunicator to 3-way connect a non-English speaking texter to language interpretative services. 9-1-1 CPE providers and/or language interpretative services will need to collaborate to provide the ability to bridge the gap between foreign language text and the information that a 9-1-1 PSAP will need to provide emergency service. This INF recommendation will need to be revisited once the technology becomes available.

4.3 Incident Information Considerations

1. It is expected that the PSAP's CPE will auto spill necessary information into the PSAP's incident event management solution. In the event that a CPE auto spill is not available, it is recommended that the telecommunicator follow the agency's procedures for manual incident entry.
2. Records for text messaging sessions and all related information should follow the PSAP's existing policies for call detail record retention. These policies may include local or state regulatory mandates.

5 Recommended Reading and References

- "50 Wireless Quick Facts." CTIA – Advocacy. December 2012. CTIA – The Wireless Association. 30 June 2013. http://www.ctia.org/advocacy/research/index.cfm/AID/10323
- National Emergency Number Association. NENA 56-001 Operational Standard "Minimum Response to Wireless Calls.
- National Emergency Number Association. NENA 9-1-1 Call Answering Standard 56-005.

6 Exhibits

Not applicable

7 Appendix

Not applicable

8 Previous Acknowledgments

None. This is original document.