CITY OF OAKLAND

AGENDA REPORT

TO:	Sabrina B. Landreth CITY ADMINISTRATOR	**FROM:**	Sean Whent Chief of Police
SUBJECT:	Implementing a Text-to- 9-1-1 System	**DATE:**	December 7, 2015

City Administrator Approval	Date	2/10/16

RECOMMENDATION

Staff Recommends That The Public Safety Committee Accept this Informational Report Detailing The Oakland Police Department's (OPD) Progress, In Coordination With The Information Technology Department (ITD) and Oakland Fire Department (OFD), In Implementing A Next Generation Text-To-9-1-1 Emergency Notification System.

EXECUTIVE SUMMARY

The Fiscal Year (FY) 2015-17 Adopted Policy Budget included a directive to provide information about a Text-to-9-1-1 system to the Public Safety Committee. This report complies with the policy directive by providing a description of text-to-9-1-1 features; current technology challenges; and required technology, staffing and training to bring such a system to Oakland. The report also explains that neither costs nor a timeline for implementation can be articulated at this time due to evolving technology and testing at the state and national levels. This report also explains how the City is preparing to accept mobile/wireless 9-1-1 calls currently transmitted by wireless towers to the California Highway Patrol call center, then rerouted to the OPD Communications Center. Staff recommends that the City consider delaying any text-to-9-1-1 implementation as technology develops and the City prioritizes mobile/wireless 9-1-1 calls implementation.

BACKGROUND AND LEGISLATIVE HISTORY

According to the April 15, 2014 report by the Governor's Office of Emergency Services (CalOES) titled *Report on Text-to-9-1-1 (Attachment A)*, this technology is "the ability to send a text message to reach 9-1-1 emergency call takers from your mobile phone or device...Text-to-9-1-1 technology will provide the public with an additional means of requesting emergency services, and will provide additional support to the deaf, hard of hearing and the speech impaired community."

The OPD Communications Division (Communications) receives 9-1-1 calls for police, fire and medical care. This dispatch center is known by CalOES as a Public Safety Answering Point

(PSAP) for the City of Oakland. Communications answers and evaluates calls, both emergency and non-emergency, to determine what police resources should be dispatched or if the call should be referred to a more appropriate agency or organizational unit. Fire-related emergency and medical calls are transferred to the Fire Dispatch Center.

For over 40 years, the citizens of California have had the ability to dial 9-1-1 using their phones to request emergency assistance. However, people's communication needs are changing due to the increasing use of devices such as smart phones, growth in the use of data services compared to voice services, and an expectation by both individual users and businesses to be always connected. Data traffic continues to grow at a rapid pace, while users want to run their applications when and where they desire. This advancement of technology has provided many ways to request emergency assistance and it continues to develop. Text-to-9-1-1 provides an additional method of requesting emergency assistance when required. The FY 2015-17 Adopted Policy Budget includes several policy directives including one to provide information about a Text-to-9-1-1 system to the Public Safety Committee. The following information was requested: 1) a thorough description of text features, needed staff training, and analysis of how it changes responsibilities for dispatch personnel; 2) potential options for implementation with costs; and 3) an implementation plan with timeline for such potential options.

ANALYSIS

OPD's current call taking and computer assisted dispatch (CAD) system are capable of receiving Text-to-9-1-1 texts; however the current technology configuration cannot actually process such texts and efficiently dispatch the texts for emergency response. OPD's current 9-1-1 CAD system was first deployed 12 years ago and relies on 15-year-old technology architecture. This architecture was built for 9-1-1 voice calls but not for data or video messages. System upgrades are required to provide the necessary technology configuration that will allow Communications to receive and process all calls for service.

Interim technology

In December 2012, an agreement was reached among the largest wireless service providers (AT&T, Sprint, T-Mobile and Verizon), the Federal Communications Commission (FCC), the National Emergency Number Association (NENA), and the Association of Public-Safety Officials (APCO) to provide text-to-9-1-1 as a nationwide interim solution – until the deployment of Next Generation 9-1-1 (NG9-1-1). The goal of the NG9-1-1 *(Attachment B – What is NG9-1-1?)* is to upgrade the country's 9-1-1 infrastructure to meet the needs of today's wireless mobile society. NG9-1-1 will allow the transmittal of text, pictures, and more to a PSAP. The current infrastructure of 9-1-1 dispatch systems such as OPD's was designed primarily to handle voice messages as opposed to text, images, or video.

The "Initial Test Results" section below details current testing of different forms of current text-to-9-1-1 systems. The aforementioned national interim text-to-9-1-1 system will work only with Short Message Service (SMS) texting (the most common current texting technology) and not multimedia message service (MMS) which supports photos, videos, and multiple recipients for a text. The interim limited SMS technology solution provided a means for the wireless carriers to

deliver text-to-911 to the public in a short time frame while longer term solutions are developed. As the April 2014 CalOES report explains, PSAPs must consider the following criteria in evaluating a text-to-9-1-1 system:

- Text-based call set-up time may take longer than voice calls.
- Language translation is not currently available.
- Transfers to other or secondary PSAPs may take longer due to different applications.
- More data storage, data retention, and data security may be needed.
- Challenges in Public Records Request Act compliance may arise.
- Potential data interoperability challenges among different PSAPs may arise.

Initial Test Results

The CalOES's Public Safety Communications Office and the California 9-1-1 Emergency Communications Branch (CA9-1-1) are conducting field trails to test three forms of text-to-911 solutions that will be made available to PSAPs. PSAPs may choose one of three different options to receive text-to-9-1-1 that will be provided by the wireless carriers. Trials are conducted to identify the technology limitations and benefits.

All three applications allow individuals to send texts for 9-1-1 support to PSAPs; **Attachment A** provides greater detail on these tests. Here is a summary of the three solutions:

1. Text-to-9-1-1 via TTY/TDD: In some instances, there were difficulties for dispatchers to distinguish between texts originating from different senders. The Downey Police Department had significant text distortion issues with their dispatch equipment. The Arcadia Police Department discovered that when call takers put the text session on hold and then took off hold, the previous text session was erased.

2. Text-to-9-1-1 via Web Portal: Benefits include providing a map of location area and having a call taker handle multiple text screens, as a call taker can easily distinguish between individuals texting for 9-1-1 support. Problems involved difficulty transferring to another PSAP or agency.

3. Text-to-9-1-1 via Integrated NG9-1-1 Interface: Initial tests indicate easy distinguishing between texters, but text sessions cannot be transferred and the application requires IP network connectivity at the PSAP (note: the City of Oakland does not have this).

Test results indicate that there is no ideal platform for implementing a text-to-9-1-1 solution in Oakland at this time. Oakland may want to wait as more testing occurs at the state level, and as the NG9-1-1 platform is deployed in coming years. Oakland is beta testing Alert 360, which is a web portal text-to-9-1-1. It does not distribute calls to each operator. Rather, the system currently exists on a stand-alone computer that must be monitored for alerts. There is no Computer Assisted Dispatch (CAD) integration at this time, so dispatchers must text back and forth and then enter the information into CAD.

As mentioned above, OPD's current 9-1-1 CAD system was first deployed 12 years ago and relies on 15 year old technology architecture which was built for 9-1-1 voice calls, not data

and/or video messages. The City Council has recently approved the initial financing of $2 million dollars for the upgrade to a new CAD system. The OPD phone switch system infrastructure will also have to be upgraded to provide the communications system with the capacity for NG9-1-1. OPD cannot easily anticipate the cost or the staff needed to fully develop a text-to-9-1-1 system that effectively integrates with all critical call and dispatch components until these new systems are implemented.

Oakland Dispatch Priorities

Communications currently answers telephonic (land-line) 9-1-1 emergency calls for service as well as non-emergency calls for service. Communications transfers fire and medical calls to the Oakland Fire Department (OFD). Beyond dispatching police officers and making referrals to OFD, services include dispatching animal control officers and other civilian responders. OPD dispatchers provide CAD purges and audio recordings of 9-1-1 calls and other incidents for court, attorneys, and departmental personnel. Communications monitors Shot Spotter equipment and creates related calls when applicable.

In 2014, Communications received 587,904 calls, including 44,137 Priority 1 calls. Communications is now preparing for a significant increase in this call volume; calls from mobile phones currently routed to CHP call takers will eventually begin to be routed directly to OPD Communications. Currently people can make 9-1-1 emergency calls for service via a traditional land-line that go directly to Communications. Mobile phone users can contact Communications directly by calling (510) 777-3211 or (510) 777-3333. Calls made by mobile phones to 9-1-1 are routed to the California Highway Patrol (CHP) call and dispatch center – and then re-routed to Oakland's call center. Communications' experience is that these re-routed calls take longer to answer, although CHP has not provided Communications with a detailed time analysis.

Historically, mobile phones were car phones, so CHP built the original telephonic infrastructure for receiving these mobile car-phone calls from cellular networks. Mobile phones using 3G and 4G networks have since become ubiquitous in Oakland as in most of the U.S. Residents and visitors rely on their handheld mobile phones for communications including emergency 9-1-1 calls. CHP and OPD agree that Oakland must build the infrastructure to directly receive the mobile calls sent to local call antennas. The Report "OPD's Intake of Wireless 9-1-1 Calls and Mapping Technology Grant," going to the Finance and Public Safety Committees on February 23, 2016, provides information on current and anticipated call volumes. The report also includes estimates on call volumes increases anticipated if OPD begins to directly receive wireless 9-1-1 calls.

OPD is relying on the State of California, Governor's Office of Emergency Services (CalOES) for the bulk of technology funding in this project. This funding will enable OPD to build the dispatch capacity to receive thousands of additional 9-1-1 calls. OPD anticipates that new GIS mapping software will allow Communications to accept wireless calls from different wireless carrier towers. The process will take approximately three years to fully route all the calls from each tower. The "OPD's Intake of Wireless 9-1-1 Calls and Mapping Technology Grant" Report provides information on the estimated additional staffing required to cover these additional calls.

There is no mandate for any City PSAPs to accept wireless text-to-911 calls. Given the immediate task of preparing to receive many more mobile/wireless calls, the City should consider delaying text-to-911 until the City fully implements mobile/wireless 9-1-1 calls for service. Taking on the task of text-to-9-1-1 prior to accepting Wireless 9-1-1 calls may indirectly affect OPD's ability to provide service and negatively impact crime reduction efforts.

PUBLIC OUTREACH / INTEREST

OPD, OFD and ITD will continue to collaborate with the state agencies testing text-to-9-1-1 systems, so that OPD's Communications Division will be prepared to implement text-to-9-1-1 technology and provide the public with an additional means of requesting emergency services. OPD and the City will conduct significant public outreach as text-to-9-1-1 becomes available and as OPD begins to directly accept mobile phone calls for 9-1-1 emergency services.

COORDINATION

OPD, OFD and ITD collaborated to investigate the information provided in this report.

FISCAL IMPACT

There are no immediate fiscal impacts connected to this report. However, OPD and ITD anticipate that eventually OPD's Communication's Dispatch Center will require a new phone switching system, as well as the now-underway CAD upgrade, before implementing a NG9-1-1 system capable of receiving text-to-9-1-1 text messages.

SUSTAINABLE OPPORTUNITIES

Economic: There are no economic opportunities associated with this report.

Environmental: There are no environmental opportunities associated with this report.
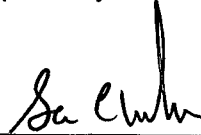
Social Equity: Text-to-9-1-1 will eventually provide additional support to Oaklanders using text features to contact 9-1-1 and submit photos and/or video directly to the dispatch system. The deaf, hard of hearing, and speech impaired communities will also directly benefit from this new technology.

ACTION REQUESTED OF THE PUBLIC SAFETY COMMITTEE

Staff Recommends That The Public Safety Committee Accept this Informational Report
Detailing The Oakland Police Department's (OPD) Progress, In Coordination With The
Information Technology Department (ITD) and Oakland Fire Department (OFD), In
Implementing A Next Generation Text-To-9-1-1 Emergency Notification System.

For questions regarding this report, please contact Bruce Stoffmacher, Legislation Manager,
OPD Research and Planning, at (510) 238-6976.

Respectfully submitted,

Sean Whent
Chief of Police
Oakland Police Department

Reviewed by:
Regina Harris, Police Services Manager
OPD, Communications Division

Ahsan Baig, Division Manager
Public Safety Services, ITD

Prepared by:
Bruce Stoffmacher, Legislation Manager
OPD, Research and Planning, OCOP

Attachments (2)
A: (CalOES) Report on Text-to-9-1-1
B: NENA - What is NG9-1-1?

Report on Text-to-9-1-1

April 15, 2014

The Public Safety Communications Office, California 9-1-1 Emergency Communications Branch conducted tests of Text-to-9-1-1 between November 2013 and April 2014 at six Public Safety Answering Points in California. Test procedures for each test pilot were developed to compare how each proposed text application operated.

Report on SMS Text-to-9-1-1 in California

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Public Safety Communications Office
California 9-1-1 Emergency Communications Branch

Page Intentionally Blank

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Executive Summary

Text-to-9-1-1 is the ability to send a text message to reach 9-1-1 emergency call takers from your mobile phone or device. On December 2012, the Nation's four largest wireless service providers AT&T Mobility, Sprint, T-Mobile, and Verizon Wireless, in cooperation with the Federal Communications Commission (FCC), National Emergency Number Association (NENA), and the Association of Public-Safety Officials (APCO)'came to an agreement to provide Text-to-9-1-1 as a nationwide interim solution until the Next Generation of 9-1-1 is deployed.

Beginning May 15, 2014, Public Safety Answering Points (PSAPs) can request the wireless carriers to deliver Text to 9-1-1 service to the PSAP. Text-to-9-1-1 technology will provide the public with an additional means of requesting emergency services, and will provide additional support to the deaf, hard of hearing and the speech impaired community.

The Public Safety Communications Office (PSCO), California 9-1-1 Emergency Communications Branch (CA9-1-1 Branch) conducted field trials to test the three forms of Text-to-9-1-1 solutions that will be made available to PSAPs; trials were conducted to identify the technology limitations and/or benefits which include variances due to PSAPs Customer Premise Equipment (CPE). This report identifies limitations and benefits of each form of Text-to-9-1-1 solutions. This report is specific to technological findings of Text-to-9-1-1; each PSAP's must evaluate the operational impacts.

Field trials provided specific results for each application and identified commonalities that are shared across all applications. Key considerations in communicating by Text-to-9-1-1 include:
- Call set up times are longer than those compared to a voice call
- Language translation for Text-to-9-1-1 is currently not available
- Text-to-9-1-1 sessions, over all, may take longer than a voice call to complete
- Transferring to another primary or secondary PSAP is limited based on application chosen by each PSAP
- Text-to-9-1-1 is a best effort service, no guarantee a text message will be sent, delivered or received in a timely manner or at all

It is important for PSAPs who are considering taking Text to 9-1-1 review and analyze how the specific solution will function with their daily operations. In addition, it is being recommended by NENA and the FCC that deployment of Text to 9-1-1 be considered on a wide area potentially country wide basis. This can help reduce the possibility of limiting the number of individuals who will have access to be able to send a text. To assist with the deployment of Text to 9-1-1 NENA and the FCC have developed various documents to assist PSAPs with their deployment options.

This report and the finding presented herein keep with the vision and leadership of the PSCO to support and promote the abilities of PSAP's in California to deliver emergency communications as expedient as possible. With the constant change in technology, and in the emergency service environment it is critical to identify and review the technology to evaluate the potential impact. The results of this study and report are designed to provide information for the PSAP to make an informed decision on what type of Text-to-9-1-1 application would best assist the PSAP in providing 9-1-1 Emergency Communications to the citizens of California.

Page Intentionally Blank

Table Of Contents

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Page Intentionally Blank

Introduction

For over forty years the citizens of California have had the ability to dial "9-1-1" to request emergency assistance. The value of this service is undeniable; however, with advances in technology new ways to request emergency assistance are being developed continuously. The deployment of Text-to-9-1-1 now provides individuals an additional method of requesting emergency assistance when required.

In December 2012, an agreement was reached among the largest four Wireless Service Providers (WSP) (AT&T Mobility, Sprint, T-Mobile and Verizon Wireless), the Federal Communications Commission (FCC), the National Emergency Number Association (NENA), and the Association of Public-Safety Officials (APCO) to provide Text-to-9-1-1 as a nationwide interim solution. This solution would provide a means to text 9-1-1 until the deployment of Next Generation 9-1-1 (NG9-1-1). The carriers agreed to provide the solution to Public Safety Answering Points (PSAPs) by May 15, 2014. Once requested by the PSAP, the wireless carriers would have up to six months to provide the Text-to-9-1-1 service.

The interim Text-to-9-1-1 solution will be for Short Message Service (SMS) texting only. SMS text service is currently the most commonly utilized texting technology. The existence of this technology provided a means for the wireless carriers to deliver Text-to-9-1-1 to the public in a short time frame. Photos, videos, and multiple recipients for a text message are not supported in SMS technology. The California PSAPs may choose one of three different options to receive Text-to-9-1-1 that will be provided by the wireless carriers:

- Text-to-TTY/TDD: which emulates the current technology used to support Teletypewriter (TTY)/Telecommunications Device for the Deaf (TDD) service for the deaf, hard of hearing and the speech impaired community
- Web Portal: which operates over a web based interface connected to the PSAP
- Integrated NG9-1-1 Interface: This service will require a full Internet Protocol (IP) enabled network to support the application, and currently only available in limited areas of California

PSAPs must evaluate the performance benefits and limitation of each application to ensure it will conform to the day to day operation of the PSAP. To provide the PSAPs the ability to make the best decision for their jurisdiction, the Public Safety Communications Office (PSCO), California 9-1-1 Emergency Communications Branch (CA 9-1-1 Branch) has completed testing of each of the three offered SMS Text to 9-1-1 options. The following report details the test procedures, results and observations of these tests. While these tests have been designed to acquire as much knowledge as possible about how Text to 9-1-1 will operate in the PSAP environment it should not be considered all encompassing. While every effort has been made to simulate situations the call taker will encounter, the actual application of this technology will provide new details that will need to be captured and shared among the PSAP community. It must be noted that interpretative services, currently provided to support voice communications, will not align with Text-to-9-1-1. Alternative interpretative services for Text-to-9-1-1 are being researched at the writing of this report.

Overview of Test Procedure

The CA9-1-1 Branch conducted testing between November 2013 and April 2014 at six PSAPs in California. Testing at each PSAP was limited to one of the three text applications. Test procedures for each test pilot were developed to compare how each application technically operated at each PSAP and to compare were applicable how each application performed against the others. Operational impact to a PSAP from taking Text-to-9-1-1 is not addressed as part of the report. The PSAP must evaluate the test results to evaluate any impact from taking Text-to-9-1-1 that may occur.

During tests a call taker from the PSAP performed all operations from the Customer Premise Equipment (CPE). Staff from the CA 9-1-1 Branch was on hand to participate, document and ensure each test was conducted as defined. Testing occurred with staff making test calls in the PSAP to observe the results, and also from a moving vehicle to observe how the application functioned in regards to a caller moving across PSAP operational areas. All tests for SMS-TTY and web based applications were conducted with cooperation from Verizon Wireless and TeleCommunication Systems INC (TCS). The IP based solution in Northern California was tested with cooperation from Verizon Wireless and Intrado Inc.

While the tests revealed specific results for each application, there are commonalities that are shared across all applications. Below are some key considerations when electing to receive Text-to-911 messages:

- Call set up times average approximately 30 seconds.
- Transfer capabilities will be limited by the application (see each test result for details).
- Language translation is currently not available as of the date this report (translation service providers are working to develop a solution for this issue).
- Text-to-9-1-1 is a best effort service, no guarantee a text message will be sent, delivered or received in a timely manner or at all.
- Routing by centroid (coarse location) - unlike wireless voice calls which use Emergency Service Number (ESN) routing that has been approved by County/CHP personnel, text sessions use a commercial product that routes on the centroid of the cell sector. The latitude/longitude presented with the initial Automatic Location Information (ALI) is that of the centroid of the cell sector (called coarse location). A re-bid to obtain the texter's location (called precise location) is possible under limited conditions. The Text-to-9-1-1 session will be routed to the PSAP whose jurisdictional boundary contains the cell sector centroid.
- Roaming is not supported – Text-to-9-1-1 is only available within in the subscriber's wireless service provider's coverage area. The texter will receive a bounce back message if the texter is outside their wireless service provider's coverage area.
- Text-to-9-1-1 setup and session duration as tested is longer than a voice call.

Note: In the case of Verizon Wireless the texter's phone may need to be updated with the Verizon "Location Agent" application. This is only available on certain handset models.

SMS Text to 9-1-1 via TTY/TDD

Standard SMS - TTY testing was performed at Downey Police Department (PD) January 8, 2014 and repeated on March 5, 2014. Testing at Arcadia PD was performed on March 6, 2014. It should be assumed that if not noted all tests resulted in the same performance at each PSAP. The following are the results of the testing:

Downey PD experienced distorted text when initial TTY text testing began, however when adjustments were made on the 9-1-1 trunks at the tandem (selective router) undistorted texts were received at the PSAP. The initial automatic TTY greeting (*9-1-1 what is your emergency?*) also had to be disabled, and made manual at the PSAP 9-1-1 equipment. Since TTY is half duplex (Communications in one direction at a time) the texter's initial message was distorted by the PSAP's automatic TTY greeting.

With initial testing the PSAP TTY screen would not automatically open when an SMS 9-1-1 text was sent. TCS changed settings at the Text Control Center (TCC) to add four (4) spaces to an initial text sent to the PSAP which alleviated the problem and allowed the TTY screen to activate. However in subsequent testing done at Downey PD on March 5, 2015 this modification did not yield the same result. It should be noted that potential line level issues on the retests at Downey PD may have contributed to the issues. Testing TTY at Arcadia PD, revealed from the start that with no adjustment to the trunks, the text messages were sent and received with minimal or no distortion.

A single call taker was able to receive more than one simultaneous SMS-to-9-1-1 text session. At Downey PD (Cassidian Vesta Pallas CPE), multiple text sessions were displayed within the same TTY screen and text sessions were mixed together. However at Arcadia PD (Intrado Viper) each TTY session operated with a separate TTY screen and the call taker could toggle back and forth between the two different sessions. A call taker at Downey PD was able to take over an active text session from another call taker, and was able to stay on the session (like a three way call) if required. The call taker could stay on or could drop the session leaving the second call taker to continue the session. A PSAP through the TCC was able to set a limit on the number of texts they could receive, if after reaching that limit, any subsequent SMS text to 9-1-1 would send a bounce back message to the texter.

A transfer to another PSAP was available with this solution. SMS Text-to-911 transfers worked the same as a standard TTY transfer. In this test, when performing a transfer, the call taker "disabled" the TTY screen at Downey PD, explained the primary was transferring a SMS Text-to-911 session and Downey Fire needed to active their TTY screen. The text session was then transferred to Downey Fire and Downey PD ended the call. Downey Fire was able to transfer the call back to Downey PD using the same procedure.

Tests included transferring to California State University (CSU) Long Beach PD, which utilizes the Geospatial Emergency management Portal (GEM911) web based Text-to-9-1-1 solution provided by TCS. When a transfer took place it was delivered on CSU Long Beach PD's TTY screen. Transfer capability tests at Arcadia PD revealed the same results as transfers between Downey PD and Downey Fire. When a text session was transferred either to another PSAP or another call taker within their own PSAP, none of the text session history followed. In the tests the call taker placed the texter on hold, while

on hold the texter continued to send text to the PSAP, however the call taker could not receive any texts sent from the texter while on hold.

The call taker at Downey PD was able to rebid for precise location with a phone that had Verizon Wireless's "Location Agent" app installed and activated. The request for rebid launched the app on the phone but it didn't process fast enough to display the information on the call takers work station. The call taker had to do a subsequent rebid to pull the cached precise location. Note: The CA9-1-1 Branch was unable to load the "Location Agent App" on multiple phones and had to request Verizon provide a phone for test purposes.

Downey PD was able to set a time of day setting. The setting allowed Downey to set hours to receive Text-to-9-1-1 during the hours of 8:00AM to 5:00PM. If a text was sent to 9-1-1 after 5:00PM the texter would receive a bounce back message. In addition, Downey PD was able to place a number on the "deny list" through TCS's TCC. This feature allows a PSAP to place harassing or repetitive texters on a list that blocks them from texting 9-1-1.

Once on this list the texter will receive a system generated bounce back message. When added to the "deny list" the PSAP connected to the TCC will not be able to receive a text from that number. Once a text session was activated at the PSAP the session remained active at the PSAP until the call taker ended the session. If a texter were to hang-up or powers their phone off during an active text session then powers it back on the text session is still active at the PSAP.

A texter could send text messages greater than 160 characters and the text was received at the PSAP. The text was received in its entirety but was partially repeated twice afterwards. TTY is only expressed in all upper case or all lower case, not both. TTY has a limited character set. The following special characters cannot be expressed "@,#,%,&,\,*,_,<>". Also a texter was able to send multiple messages, one right after the other, however if the call taker responded at the same time the texter was texting the texts may collide and the PSAP may receive distorted data or no text at all. The TTY transcript may be available in Emergency Call Tracking System (ECaTS) depending on the 9-1-1 CPE.

SMS Text-to-9-1-1 via TTY/TTD - General Observations
- Requires no additional Customer Provided Equipment (CPE) at the PSAP
- ALI screen displays coarse caller location
- No additional screen real estate
- Texts displays in the same format as TTY/TTD does today (Baudot tones converted to text)
- Routes through the existing legacy selective router
- Transfer capability: Does not store previous conversation, transfer picks up conversation at time transfer
- Ties up a 9-1-1 trunk for duration of text session
- Conversation records in ECaTS (CPE vendor specific), Management Information Systems (MIS) Stats are provided
- Should Text-to-9-1-1 not be available because the 9-1-1 trunks are out of service the texter will receive an automatic bounce back message
- May require 9-1-1 CPE technician time for set up and implementation

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Downey Police Department
- Solution type: Standard SMS - TTY
- Network/Vendor: Verizon Wireless and TCS
- PSAP 9-1-1 Equipment: Vesta Pallas
- Date Tested: January 8, 2014 and March 5, 2014
- Test Cases, Procedure and Results: see Appendix A and B
- Key observations
  - Trunk levels were changed to reduce distortion of received text for testing (however the Local Exchange Carrier (LEC) will not adjust levels to accommodate text from normal levels)
  - CPE technician had to remove initial PSAP TTY auto reply message as it distorted the first text to PSAP (half duplex)
  - Half duplex (9-1-1 texter and call taker could not send texts simultaneously, text was distorted)
  - Difficult for a call taker to handle 2 text sessions at a time (call taker could not distinguish which texter was texting)
  - Uses a 9-1-1 trunk for duration of text session
  - Character limitations: Only upper or lower case not both, the following characters cannot be expressed "@.,# ,%, &, \, *, _, < >"
  - Text-to-9-1-1 session captured in ECaTS
  - Retest on March 5th continued to get distortion. LEC changed trunk levels but could not eliminate distortion on additional trunks installed for tests
  - Downey PD had to wait two rings to answer the text or they would not receive Automatic Number Identification (ANI)

Arcadia Police Department
- Solution type: Standard SMS - TTY
- Network/Vendor: Verizon Wireless and TCS
- PSAP 9-1-1 Equipment: Viper
- Date Tested: March 6, 2014
- Test Cases, Procedure and Results: See Appendix C
- Key observations:
  - Minimal text if any distortion than when compared to Downey PD pilot - used active PSAP trunks
  - When the call taker put the text session on hold and taken off hold, as soon as the call taker started responding back to the texter, all the previous conversation was erased
  - Text-to-9-1-1 was not recorded in ECaTS, a standard TTY call was tested and was not recorded in ECaTS using the viper CPE
  - PSAP was able to transfer to another PSAP, however the other PSAP was unaware of the transfer, the other PSAP's TTY screen opened without notification

Page Intentionally Blank

Cal OES
GOVERNOR'S OFFICE OF EMERGENCY SERVICES

SMS Text-to-9-1-1 via Web Interface

GEM911 Web based Text-to-9-1-1 testing was performed at CSU Long Beach PD November 20, 2013 and repeated at South Bay Regional Public Communication Authority, March 6, 2014. It should be assumed that if not noted all tests resulted in the same performance at each PSAP. The following are the results of the testing:

This service is delivered outside of the 9-1-1 network this is an internet based solution. No PSAP CPE adjustments were required because text sessions are not processed thru the 9-1-1 network. These text sessions are delivered on a separate monitor not connected to the 9-1-1 CPE and must have at least limited internet access. GEM911 emulates an instant message session. No distortion of any text messages was experienced during text sessions.

A single call taker was able to receive more than one simultaneous SMS-to-9-1-1 text session. Call takers could toggle between the text sessions since all sessions appear on every call takers screen and the call taker just selects which text session they want to interact with. The call taker was made aware of when a message was waiting on an existing session. The PSAP could set a limit on the maximum number of texts they wanted to receive (through the TCC). If after reaching that limit, any subsequent SMS text to 9-1-1 would send a bounce back message to the texter.

A transfer to another PSAP was available in this solution under specific conditions. The texter has to move to a different area where either the precise location of the handset (if available) or cell sector centroid is in another PSAP's jurisdictional boundary and where that PSAP is also accepting text from the same text service provider. If the transfer was between GEM911 solutions the history will follow with the transfer. If the transfer was between GEM911 and TTY no other history would follow.

The call taker at CSU Long Beach was able to rebid for precise location with a phone that had Verizon Wireless's "Location Agent" app and the app was activated. When the call taker first received the text they received coarse location however the call taker was able to rebid and get precise location.
CSU Long Beach PD and South Bay Regional were able to set a time of day setting. Hours were set to receive Text-to-9-1-1 during the hours of 8:00AM to 5:00PM. If a texter sent a text after 5:00PM the texter would receive a bounce back message. However, if an active text session is in place at 4:59PM that text session would still be active after the time of day setting. The PSAP must log in at the beginning of a shift and will need to make sure they close all text sessions at the end of the shift to ensure no text sessions are left active.

With the GEM911 the PSAP Administrator was able to place a number on the "deny list" through the TCC. This feature allowed a PSAP to place harassing or repetitive texters on a list that blocks them from texting 9-1-1. Once on this list, the texter would receive a system generated bounce back message.

Once a text session was activated at the PSAP the session remained active at the PSAP until the call taker ended the session. If a texter were to hang-up or powers their phone off during an active text session then powers it back, the text session is still active at the PSAP. If call takers are not logged into the GEM911 system a texter will receive a bounce back message.

Texters can send text messages greater than 160 characters and they will be received at the PSAP as the GEM application is not confined to TTY protocol. When the GEM911 screen is minimized the call taker will receive an audio tone on the initial received text, no audio is available on subsequent texts during the same session.

The GEM911 service is not recorded in ECaTS. A PSAP will have to work with the text service provider (TCC) to obtain records.

SMS Text-to-9-1-1 via a Web Portal - General Observations
- Requires PSAP to have at least limited internet access at the call taker postion(s)
- A separate web portal is opened and monitored for incoming Text-to-9-1-1
- Emulates instant messaging
- Provides map display of location area
- Routes outside of the legacy selective router
- No statistical reporting
- Limited transfer capability
- One call taker can handle multiple text sessions

CSU Long Beach Police Department
- Solution type: Web based (GEM911)
- Network/Vendor: Verizon Wireless and TCS
- PSAP 9-1-1 Equipment: Tritech
- Date Tested: November 20, 2013
- Test Cases, Procedure and Results: see Appendix D
- Key observations
    - Call taker could easily distinguish which texter was texting during multiple concurrent text sessions
    - Emulates an instant message session
    - Unable to transfer text session unless texter moved into another PSAPs jurisdiction (vendor is working to develop process for transfer capability)
    - Unable to transfer text session to a secondary PSAP
    - Not recorded in ECaTS, requires manual tracking at PSAP

South Bay Regional Public Communication Authority
- Solution type: Web portal (GEM911)
- Network/Vendor: Verizon Wireless and TCS
- PSAP 9-1-1 Equipment :
- Date tested: March 6, 2014
- Test Cases, Procedure and Results: See Appendix E
- Key Observations:
    - Call taker could easily distinguish which texter was texting during multiple concurrent text sessions
    - Emulates an instant message session

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

- Unable to transfer text session unless texter moved into another PSAPs jurisdiction (vendor is working to develop process for transfer capability)
- Unable to transfer text session to a secondary PSAP
- Not recorded in ECaTS, requires manual tracking at PSAP

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Page Intentionally Blank

SMS Text to 9-1-1 via IP Interface

Internet Protocol (IP) based Text-to-9-1-1 testing was performed at Butte County Sheriff, March 27, 2014 and repeated at Chico PD, April 2, 2014. In this solution, TCS's TCC delivered the text to Intrado's Emergency Services IP network (ESInet) in Northeastern California, Intrado then delivered the text to Butte County Sheriff. There are only a small number of PSAPs that are fully IP compliant to the CPE, this solution would not work for the majority of the PSAPs in California.

IP based service is delivered outside of the normal 9-1-1 legacy network. The text service is carried in an IP format from the wireless caller to the CPE at the PSAP. Butte County Sheriff and Chico PD were part of a project to deliver wireless 9-1-1 calls via X/Y location (latitude/longitude) via an ESInet. Butte county PSAPs currently have IP capable Customer Premise Equipment (CPE). The text sessions are delivered on the existing call taker 9-1-1 CPE. SMS text to 9-1-1 via IP emulates an instant message session. It should be assumed that if not noted all tests resulted in the same performance at each PSAP. The following are the results of the testing.

Providing text was not part of the original CPE requirements, CPE adjustments were required to allow texting feature to be enabled at Butte Co. Sheriff, Chico PD and CSU Chico PD. No distortion of any text messages was experienced during text sessions.

A single call taker was able to receive more than one simultaneous SMS-to-9-1-1 text session. Call takers could toggle between the text sessions since all sessions appear on every call taker's screen and the call taker just selects which text session they want to interact with. The call taker was made aware of when a message was waiting on an existing session. For this solution, the maximum queue size = # of call takers logged in + a configurable value called maxQueueSizeDelta. The default value of maxQueueSizeDelta is 1. This means that the minimum number of texts before a bounce back message was be sent is equal to the # of call takers logged in at a given time per PSAP plus one text waiting in queue.

Transferring to another PSAP, rebidding for location, time of day setting (limits time texts can be received) and deny list are currently not available in this solution.

Once a text session was activated at the PSAP the session remained active at the PSAP until the call taker ended the session. If a texter were to hang-up or powers their phone off during an active text session then powers it back, the text session is still active at the PSAP.

Texters can send text messages greater than 160 characters and they will be received at the PSAP. During tests using a string of 380 characters, the first time the test was split into three messages and they were not sequential when they were delivered to the PSAP, the test was preformed again and the text was again split into three texts and were delivered sequential.

The SMS text to 9-1-1 via IP service is not recorded in ECaTS, but is recorded with in the CPE MIS service.

Note: Testing was cancelled at CSU Chico PD as no Verizon Wireless cell sector centroids are located in Chico PD's jurisdiction, therefore no Text-to-9-1-1 messages would route directly to that PSAP.

SMS Text-to-9-1-1 via IP - General Observations
- Requires IP capable CPE and IP network connectivity to a Text Control Center (TCC)
- Direct integration with IP CPE
- Routes outside the legacy selective router

Butte County Sheriff, Chico Police Department
- Solution type: IP
- Network/Vendor AT&T/Intrado
- PSAP 9-1-1 Equipment: Hosted Viper
- Date Tested: March 27, 2014 Butte County Sheriff, April 2, 2014 Chico PD
- Test Cases, Procedure and Results: see Appendix F and G
- Key Observations:
  - Call taker could easily distinguish which texter was texting during multiple concurrent text sessions
  - Emulates an instant message session
  - Call takers are not made aware if other call takers are on a text session
  - ALI screen is not populated, location is delivered in the body of the text
  - Unable to transfer text session
  - Text sessions are not recorded in ECaTS, PSAP's MIS service reported all of the text data including summary sheet of the text session

Test Results Matrix

Date Tested	January 8 & March 5, 2014		March 6, 2014		November 20, 2013		March 6, 2014		March 27, April 2 & 9, 2014	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Verify text Routed correctly	X		X		X		X		X	
Rebid Capability	X		X		X		X			X
Bounce Back if no response from PSAP		N/A		N/A		N/A		N/A	X	
1 call taker handling 2 Text sessions	X but all mixed in the same TTY screen		X, calltaker could toggle between TTY screens		X		X		X	
Bounce back msg received if PSAP busy	X		X		X		X		X	
Session stays up when texter's hand set is powered down 5 mins and powered back on	X		X		X		X		X	
Texter received bounce back when standing within the PSAPS Jurisdiction and the cell sector centroid is outside the PSAP's Jurisdiction	X		X		X		X			Didn't Test
Text was delivered to PSAP when texter standing outside PSAP's jurisdiction and the centroide is inside PSAPS jurisdiction	X		X		X		X			Didn't Test
Verify audio tone is heard when Web based application is minimized	N/A		N/A		X, only on initial text		X, only on initial text		N/A	
Ability to block number when added to the deny list*	X		X		X		X			Not Supported
Bounce back received when time of day setting activated and text is made out of hours	X		X		X		X			Not Supported
Verify bounce back received if no user logged in	N/A		N/A		X		X			N/A
Can transfer text between call takers	X		X		X		Didn't test			X
Recorded in ECaTS or CPE MIS	X			X				X	X, CPE MIS	
Transfer text to another PSAP	X			X		Is limited		Is limited		X
Can process text over 160 characters	X		X		X		X		X	
use of Language Translations		X		X		X		X		X

* when PSAP adds # to the Deny list it will block that number system wide.

Page Intentionally Blank

Conclusion

Tests demonstrate that regardless of the application, in all cases an individual will be able to send a text to a PSAP to request emergency assistance provided the PSAP is setup to take text messages. However, prior to requesting to have one of the carriers enable the PSAP to take text, the PSAP should consider the type of applications that will best serve the PSAP. While each application can provide Text-to-9-1-1, each application has limitations that may or may not be conducive with the operation of the PSAP.

PSAPs may find the utilization of the SMS Text-to-TTY/TDD application more cumbersome than the web based application. Conversely the ability of the SMS Text-to-TTY/TDD application to transfer text to a secondary PSAP through the selective router a benefit where the Web Based application must wait for a texter to move to a different location to be able to transfer. These and the other results of the tests should be reviewed prior to requesting to have text initiated at the PSAP.

The IP solution is not discussed at this point as it is limited to a select number of PSAPs at this time until NG9-1-1 is deployed in the future. Please see test results for evaluation.

The PSAP must also evaluate the impact to the operations of the center and the need of the PSAP to establish training of call takers to ensure they are kept current on the use of the application. While the frequency of texts being placed to a PSAP is unknown it will be critical that regardless call takers be familiar with the use of the application chosen at all times.

Besides the issue of selecting the application that will best work for the PSAP, PSAPs must consider the best option to deploy Text-to-9-1-1. The FCC and NENA recommend that PSAPs consider wide area roll outs such as a county wide deployment. This will help eliminate the possibility of creating small areas where only a limited number of PSAPs take text and limits the ability of citizens to be able to reach a PSAP. In some cases the option of having one PSAP take text for a geographical area and having the PSAP relay requests for assistance to the other participating PSAPs may be a potential solution. PSAPs should review the literature provide by NENA and the FCC listed in this document under references to assess deployment options.

For clarification on any portions of the tests completed, please contact the CA9-1-1 Branch at: (916) 657-9369.

Resources
NENA's interim SMS Text-to-9-1-1 Information and Planning Guide:
This document provides information and planning guidelines for Public Safety to support their efforts to plan and implement Interim SMS Text for 9-1-1 service. Version 1 will be followed in a by an expanded version 2 that will document more information in this area, including the experiences of early adopters for SMS text for 9-1-1. Four major carriers (AT&T, Sprint, T-Mobile, and Verizon Wireless) are committed to making SMS Text for 9-1-1 available by May 15, 2014. Public Safety management is encouraged to take action to bring SMS Text for 9-1-1 to their county, to provide texting to 9-1-1 capability to the residents who are deaf, hard of hearing, or have a speech disability, as well as others who need to use text in emergency situations
http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/Docs/SMS_Text_Info_and_Planning.pdf

NENA's PSAP interim SMS Text-to-9-1-1 training document
The purpose of this document is to provide support information and education materials for PSAPs planning on moving forward with the Interim Solution for Text-to-9-1-1.
http://www.nena.org/?text_training_docs

NENA's FAQ's for interim SMS text to 9-1-1
This document provides additional information to 9-1-1 authorities/PSAPs when deciding when and how to accept interim solution Text-to-9-1-1 calls.
http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/standards/faq_for_interim_text-to-9-1-.pdf

NENA's Is SMS Text-to-9-1-1 right for my PSAP? A consideration document.
This document provides PSAPs and 9-1-1 entities with a list of topics or questions to consider when deciding whether to accept the interim solution Text-to-9-1-1 calls. This document contains a high-level list of considerations prior to making the decision of which interim solution option to select.
http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/standards/is_Text-to-9-1-1_right_for_m.pdf

FCC Best Practices for Implementing Text-to-9-1-1:
This document provides information regarding implementation and insight from APCO, NENA, Vermont, Texas and a number of other PSAPs regarding Text-to-9-1-1.
http://www.fcc.gov/encyclopedia/best-practices-implementing-text-911

Acknowledgements:

To complete the testing of Text to 9-1-1 required the effort and cooperation of many individuals and organizations. The CA 9-1-1 Branch would like to thank all pilot PSAPs for the help they provided in completing the tests. The CA 9-1-1 Branch would also like to thank the vendors involved, TCS, Intrado and Verizon Wireless for all of their help in the planning and execution of the tests.

Participating Individuals and Organization

- Ella Sotelo, County Coordinator, Los Angeles County
- Greg Pascal, PSAP Manager, California State University Police Department, Long Beach
- Heidi Calhoun, PSAP Manager, Downey Police Department
- Chris Campbell, PSAP Manager, Arcadia Police Department
- Shannon Kauffman, PSAP Manager, South Bay Regional Public Communication Authority
- Cheri Lynn Rockwell, County Coordinator - Butte County
- Trina Wehle, PSAP Manager, Butte County Sheriff's Office
- Nancy Wilson, PSAP Manager, Chico Police Department
- TeleCommunications Systems, INC (TCS)
- Intrado
- Verizon Wireless
- Long Beach Police Department

Participating CA9-1-1 Branch Staff

- William Anderson, Branch Manager
- Wes Nitta, Supervising Telecommuncations Engineer
- Chereise Bartlett, Telecommunications Systems Manager I
- Alicia Fuller, Telecommunications Systems Manager I
- Jim Thompson, Telecommunications Systems Manager I

Acronym Glossary for Report on Text-to-9-1-1

ALI: Automatic Location Identification
ANI: Automatic Number Identification
APCO: Association of Public Safety Communication Officials
Centroid: A single location that represents the center of the cell sector
CPE: Customer Premise Equipment
CSU: California State University
ECaTS: Emergency Call Tracking System
ESInets: Emergency Services IP Networks
ESN: Emergency Service Number
FCC: Federal Communications Commission
GEM9-1-1: Geospatial Emergency Management Portal
Half Duplex: Messages can be sent in both directions but only one direction at a time.
IP: Internet Protocol
LEC: Local Exchange Carrier
MIS: Management Information System
NENA: National Emergency Number Association
NG911: Next Generation 9-1-1
PD: Police Department
PSAPs: Public Safety Answering Points
PSCO: Public Safety Communications Office
SMS: Short Message Service
TDD: Telecommunications Device for the Deaf
TCC: Text Control Center
TCS: Telecommunication Systems INC
TTY: Teletypewriter
WSP: Wireless Service Provider
X/Y location: Location identified by the intersection of the Longitude and Latitude

What is NG9-1-1?

Introduction

The evolution of emergency calling beyond the traditional voice 9-1-1 call has caused the recognition that our current E9-1-1 system is no longer able to support the needs of the future. Next Generation 9-1-1 (NG9-1-1) networks replace the existing narrowband, circuit switched 9-1-1 networks which carry only voice and very limited data. Currently there are difficulties in supporting such things as text messages for emergencies, images and video (including support for American Sign Language users), and easy access to additional data such as telematics data, building plans and medical information over a common data network. In addition, the need for inter-communications across states, between states, and across international boundaries requires that we create a more flexible 9-1-1 system design with much greater data handling capabilities. A highly standardized system is essential and critical to seamlessly support communications and data transfer across county, state, and international borders, and across the multitude of emergency response professions and agencies, from traditional PSAPs to Poison Control Centers, trauma centers, Coast Guard, and disaster management centers. There will be numerous and varied steps toward the new system named NG9-1-1, and vendors are already referring to their products as aimed at, enabling, or being wholly NG9-1-1 compliant. Vendors who have direct experience with parts of today's E9-1-1 system and service, and who are directly involved in NENA and other standards development can and are starting to produce NG9-1-1 oriented products. The direction of the Standards that will support NG9-1-1 is becoming clear, and demonstrations and trials are beginning to appear and will contribute to continued standards development. Despite this progress, a fully featured, truly "standards based" NG9-1-1 system is not yet identifiable, because the necessary standards are still in development. As a result, a summary definition of NG9-1-1 as a system and service process is needed to clarify what is involved.

NG9-1-1 Summary Definition

NG9-1-1 is a system comprised of hardware, software, data and operational policies and procedures briefly described below, to:

- provide standardized interfaces from call and message services
- process all types of emergency calls including non-voice (multi-media) messages
- acquire and integrate additional data useful to call routing and handling
- deliver the calls/messages and data to the appropriate PSAPs and other appropriate emergency entities
- support data and communications needs for coordinated incident response and management
- provide a secure environment for emergency communications

The basic building blocks required for NG9-1-1 are:

- Emergency Services IP Network (ESInet)
  ESInets use broadband, packet switched technology capable of carrying voice plus large amounts of varying types of data using Internet Protocols and standards. ESInets are engineered, managed networks, and are intended to be multi-purpose, supporting extended Public Safety communications services in addition to 9-1-1. NG9-1-1 assumes that ESInets are hierarchical, or a `network of networks' in a tiered design approach to support local, regional, state and national emergency management authorities.

- International Standards Compliant IP Functions

- Internet Engineering Task Force (IETF[1]) based IP protocol standards provide the basic functionality of the system. NENA has applied standards from IETF and other Standards Development Organizations to specific NG9-1-1 requirements. Examples are: Location Validation Function (LVF) and Emergency Call Routing Function (ECRF) and other functions, as defined in NENA 08-002, [IP] Functional and Interface Standards for NG9-1-1 (i3). This NENA Standard defined the core IP functionality of the larger NG9-1-1 system.Software Services/Applications
  NG9-1-1 uses service oriented architecture, software applications and data content to intelligently manage and control its IP based processes. NG9-1-1 is software and database driven to enable an exponential increase in available data and information sharing possibilities. It also provides flexibility and individual agency choice to determine information needs based on predetermined business/policy rules.

- Databases and Data Management
  NG9-1-1 uses a set of database systems to house and provide management of the above data content. Some examples are: validation, routing control, policy/business rules, and system-wide detail call records. (reference: pending NENA NG9-1-1 Data standards)

  NG9-1-1 provides the mechanisms to access external sources of data, either automatically or manually, via the ESInet, to support more knowledgeable and efficient handling of emergency calls/messages. Examples: telematics/ACN data, hazardous material information, building plans, medical information, etc.

- Security
  NG9-1-1 provides extensive security methods at the hardware and software levels to replicate the privacy and reliability inherent in E9-1-1 services.

---

[1] IETF (Internet Engineering Task Force) generates international IP standards for Internet and other applications

- Human Processes

    NG9-1-1 as a service system involves a multitude of human procedures and system operations procedures to control and monitor the functionality and effectiveness of the systems and services that provide NG9-1-1 service. Examples include database establishment and maintenance procedures, IP network operations, security processes, trouble shooting procedures, database auditing and accuracy validation procedures,.

NENA's Role

NENA is an organization chartered to represent both public safety and the 9-1-1 industry, present and future, in its mission to focus on the development, evolution, and expansion of emergency communications. NENA is the organization responsible to define NG9-1-1, and to coordinate the development and support of NG9-1-1 as a system and a service to the public, the industry, and to Public Safety entities.

In the past, this has been about 9-1-1 exclusively, but the future involves a more `virtual' approach to how the public and governmental entities accomplish emergency communication through NG9-1-1. Text devices don't `dial' 9-1-1, for example, but use a different form of identification to access the system and achieve delivery to PSAPs and other entities. However, the basic processes and service needs are the same, no matter what `code' is used. The conceptual base of NG9-1-1 is international in scope, designed to support all emergency codes, such as 9-1-1, 1-1-2, 1-1-1, and all others among the 62 access codes (at last count) used around the world. Other communications and data exchange functions that will be considered part of an NG9-1-1 system won't use any such access codes, but will access ESInets as necessary to communicate seamlessly across local, State, regional, international boundaries.

What development and support areas does NENA focus on for NG9-1-1?

(Other organizations may be involved)

Role	NENA	Vendors	Local Gov	State Gov	Fed'l Gov
Defining requirements to meet E9-1-1 and NG9-1-1 needs	X				
Defining new NG9-1-1 functions and features to expand emergency communications capabilities	X	X	X		
Defining interface and functional standards for NG9-1-1 and its subsystems	X				
Defining NG9-1-1 database content standards	X				

Defining detailed product designs for NG9-1-1 subsystems		X			
Defining detailed operations procedures for individual NG9-1-1 subsystems		X			
Defining overall NG9-1-1 system operational procedures	X		X		
Developing methods to ensure a secure environment	X	X			
Defining best practices for how to utilize NG9-1-1 features and functions	X				
Ensuring that local, state, federal and tribal statutes, regulations and overall policies enable, rather than prohibit, NG9-1-1	X		X See note below	X	X
Defining recommended transition processes to move from today's 9-1-1 systems to NG9-1-1	X				
Providing a means for Certification and Accreditation	X				
Ensure that products adhere to defined standards to allow interoperability through open architecture		X			

Note: Local Government has two roles – funding management and public safety operations

NG9-1-1 – Are we there yet?

<u>Fully featured, standards based</u> NG9-1-1 will likely be implemented in successive releases; but unless it's a full replacement for existing E9-1-1 functions[2], including additional features to bring 9-1-1 service up to the level needed in today's emergency communications environment, it is not a true "next generation" of 9-1-1. True NG9-1-1 will include the ability to support interactive text messaging, policy-based routing using location and several other factors, such as call type, target PSAP status, network status, and automatic acquisition of supportive data and its use within the system to control routing and other actions prior to delivery to the PSAP, and many other standards defined features and functions.

When a newer, IP based replacement for E9-1-1 meets or exceeds the <u>capability</u> set above, it will achieve fully featured NG9-1-1. Note that this is not about having all possible originating service types implemented, but that the NG9-1-1 capabilities defined above are present, tested (to the extent possible, which may be limited to lab testing if there are no live instances of any

given capability) [2], and ready for service. If a given IP-based system is not capable of all initial NG9-1-1 features and functions, it can certainly be considered to be on the path to full NG9-1-1, but is still pre-NG9-1-1 in nature.

RCH 09/2008

---

[2] Utilizing a new system for ongoing 9-1-1 service in a way that is highly unlikely to disrupt emergency communications requires that the new system be as completely featured as the old system, and tested in advance.