



**Emergency Access Advisory Committee (EAAC)
Working Group 1 Recommendations on Text
Messaging to 9-1-1**

DRAFT

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Executive Summary

1 Overview

The Federal Communications Commission's ("FCC") Emergency Access Advisory Committee (EAAC) is pleased to offer the following recommendations to advance near-term access to 9-1-1 for individuals with disabilities.

Established by the FCC pursuant to The Twenty-First Century Communication and Video Accessibility Act (CVAA) of 2010¹ ("CVAA"), the EAAC believes that achieving equal access to 9-1-1 emergency services by individuals with disabilities as part of the migration to the national Internet protocol ("IP")-enabled emergency network ("NG9-1-1") is a matter of long-term national policy. The EAAC recognizes that achieving the goal of an accessible NG9-1-1 system will require the collective commitment of all stakeholders, including consumers, industry, public safety and policymakers, to address the critical issues of technical standards, service deployment, and appropriate governance and funding.

As part of the December 2011 report to the FCC, the EAAC recommended that an achievable interim method for text-based messaging to 9-1-1 would be necessary until NG9-1-1 is fully developed, deployed and adopted by industry, public safety and consumers.² In furtherance of this recommendation, the EAAC requested that all stakeholders, including industry, consumers and public safety, the FCC and Department of Justice, work together to find an interim solution that can be rapidly deployed to provide nationwide access to 9-1-1 services through industry standards-based mobile text communications solution(s) to provide critical coverage for this important constituency during the transition to NG9-1-1.

In January 2012, the EAAC designated a working group to make recommendations to encourage the availability of pre-NG911 interim Text-to-911 ("Working Group"). In March 2012, the EAAC adopted a resolution to support "as an interim solution for text to 9-1-1, at a minimum, SMS, and other technologies as appropriate, with a three digit short code 9-1-1." The Working Group has expended significant time and resources developing the following report by learning from each other and collaborating on issues in furtherance of near-term Text-to-911.

The Working Group's first effort was to complete a set of assumptions on which to focus the Working Group's efforts. These assumptions include:³

- Using any number besides 9-1-1 creates the problem that the user will probably never remember it when they have an emergency, if they ever knew that there was a number besides 9-1-1.
- This short-term solution should not necessarily be subject to all of the requirements of either voice 9-1-1 calls or long-term solutions so that it can be implemented in the near term and without extensively reworking the carrier, handset, or PSAPs systems.

¹ Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 124 Stat. 2751 (CVAA) (amending sections 3, 255, 303, 503, 330, 710, and 713 of the Communications Act, and adding sections 615c and 715-19, codified at 47 U.S.C. §§ 153, 225, 303, 330, 503, 610, 613, 615c, 616-20).

² FCC EAAC Report and Recommendations, PS Docket No. 10-255, at 26 and 28-30 (Dec. 12, 2011) (resubmitted in final Jan. 26, 2012) ("EAAC Recommendations for Interim Text Access and Interim Mobile Text Solution").

³ See Presentation of EAAC Working Group 1, Text-to-911 Solutions to 911 Interim to NG911 (Sept. 14, 2012) (outlining key assumptions about Pre-NG911 Interim Text to 911).

- The FCC should work with consumers and industry to secure any needed additional liability protection for all entities that are implementing these new text to 9-1-1 calls.
- The EAAC believes that if the text message to 9-1-1 solution is not available to all people, with and without disabilities, that it would be too complicated for carriers and others to qualify some people as eligible and others as ineligible to make an SMS/text message call to 9-1-1 during emergency situations. The liability issues from denying access to unregistered callers would complicate the issue further.
- The EAAC directed for this subcommittee to take this topic up in 2012 and submit a separate report on this important topic.
- From a consumer standpoint, direct access via mobile text to 9-1-1 is a critical goal.

Using these assumptions as the base of work, the Working Group designated four subgroups to consider *User Needs and Constraints*, *Originating Networks and Devices*, *Transport Networks*, and *Public Safety Answering Point (“PSAP”)* issues. After considering the issues, the Working Group developed recommendations to address near-term opportunities for Pre-NG911 Text-to-911.

As the technical, operational, and regulatory frameworks for Text-to-911 continue to develop, the EAAC wishes to note that the adoption and application of these recommendations will need to be determined through the appropriate rulemaking and standards development processes. The EAAC also notes that some of the recommendations may require further research and development of technical standards, best practices or guidelines, before they can be applied. The EAAC recognizes that public expectations, including individuals with disabilities, for 9-1-1 emergency communications should be taken into consideration where further research and development may be necessary.

The EAAC wishes to express its appreciation to the individual Working Group members, EAAC members and FCC staff for the time and commitment that has gone into preparation of this report, and for the progress that the EAAC has made since it first met on January 14, 2011.

2 User Needs and Constraints

This section responds to key questions posed by EAAC on the user experience during a text-to-9-1-1 call, and outlines questions related to user expectations.

Which text communication methods do users want to use in the interim?

In order of importance:

1. Native SMS
2. Over-the-top SMS apps (3rd party app that goes through 3rd party service to send SMS to another device, on tablets and computers)
3. Combinations of voice and text.

Note: There are four variations of this scenario.

- a. User makes a voice call to 9-1-1 and for the duration of the call the user as well as the PSAP intermix voice and text.
- b. User makes a voice call to 9-1-1 and for the duration of the call the user uses voice and the PSAP sends text back.
- c. User makes voice call to 9-1-1 and for the duration of the call both the user and the PSAP text only.
- d. User will send text to PSAP and ask for a voice call back and then for the duration of the call the user can text and the PSAP respond with voice.

For other possible interim solutions, beyond SMS, the EAAC survey⁴, question 16, on p. 23, covers this aspect. The results are as follows:

1. SMS (45.1%)
2. Real-time text (45.7%)
3. Email (43.7%)
4. IM (31.1%)
5. Web page (30.2%)
6. Systems built into car (21.3%)

Note: . The EAAC resolution⁵ supports "as an interim solution for text-to-9-1-1, at a minimum, SMS, and other technologies, as appropriate, with a three digit short code 9-1-1." The user preferences suggest that RTT, e-mail, and IM should be evaluated for their feasibility as additional means to contact a PSAP, in accordance with the "other technologies, as appropriate" part of the resolution. Due to PSAP constraints, web based access and system built into cars may have to wait until the longer term.

Which devices do users want to use in the interim?

Ranking of devices in order of importance, also see EAAC survey Question 21:

1. Mobile phones and devices (61.8% for cell phone, 53.7% for smartphone, pager, PDA)
2. Tablets (Survey results under "Others" shows that 9 respondents mentioned iPads or iPods)
3. Computers

Note: This survey question shows which devices users would employ for texting 9-1-1. Both computers and tablets support over-the-top text-to-9-1-1.

⁴ See EAAC, *Report on Emergency Calling for Persons with Disabilities Survey Review and Analysis 2011*, July 21, 2011, available at <http://transition.fcc.gov/cgb/dro/EAAC/EAAC-REPORT.pdf>.

⁵ See FCC EAAC, Resolution regarding Text Messaging to 911 (adopted March 30 2012)

Note: Regarding point 1 above: EAAC does not have a detailed breakdown for the cell-phone figure. It is possible that the 61.8% figure includes all three types: smartphones, feature phones and basic phones.

Note: Regarding point 2 above: Since the EAAC survey was conducted, the market share of tablets has increased rapidly. The importance of tablets as number two in the above ranking is based on the assumption that today many more people with disabilities use tablets than when the survey was originally conducted and the adoption of tablet use among this community will continue to grow.

2.1 User experience

The points below reflect the user expectations, as they pertain to text-to-9-1-1.⁶

Direct access: The expectation is that users have direct access to 9-1-1 services. There are no third parties sitting in the path between callers and telecommunicators.

Initiating contact with 9-1-1: Users will expect that the primary method of initiating contact with 9-1-1 is via sending a text message using the three-digit code 9-1-1.

Calling 9-1-1 by voice and receiving text back: Deaf and hard of hearing users who have some voice communication capabilities may be able to initiate a 9-1-1 voice calls. These users may expect to call 9-1-1 by voice and request the PSAP telecommunicator to text them back.

Not being required to register for 9-1-1 services: Users cannot be expected to plan ahead for emergencies. The expectation is that they will not be required to register prior to using text-to-9-1-1 services. Education may be necessary to help a user appreciate that they will need to be a subscriber to the relevant text service by which they are attempting to use 9-1-1 services.

Bounce-Back message: Users will expect to receive information on the success or failure of a text-to-9-1-1 message. If PSAPs in an area do not support text-to-9-1-1 yet, the user will expect to receive an automated text response immediately that states that text-to-9-1-1 is not available and that a voice call should be made to 9-1-1. *Note:* It is important that the content of this message be accessible to people with widely varying reading abilities, and as such needs to be crafted carefully to consider the unique needs of people with disabilities.

Technical note: The nature of SMS may limit the technical feasibility of the user expectations with respect to bounce-back messages. It may not be possible to determine success or failure of SMS message delivery, but rather only the availability of text-to-9-1-1 services. Likewise, the store-and-forward nature may cause delivery to happen as soon as technically feasible, rather than immediately.

⁶ Although the EAAC recognizes that each point describes user expectations for interim Text to 911 services, the availability of each point will be subject to technical and economic feasibility. Where such features are not technically or economically feasible to implement for interim Text to 911 services, the unavailability of such features should be communicated to the end user through public education, as appropriate.

Roaming: Users will expect the text-to-9-1-1 service to work nearly everywhere within USA. Users are likely to get confused if there are technical limitations pertaining to roaming between carriers within USA.

Note: To the extent that text-to-9-1-1 during roaming within USA cannot be solved via technical means, it is important that users, as stated in the previous paragraph, that they are informed about success and failures of a text-to-9-1-1 message. The expectation is that if a failure occurs due to roaming, or for some other technical reason, the user is informed via an automated text response immediately. Like in the previous note, the contents of this message would need to be crafted carefully.

Note: Failures because of roaming when US users are in other countries and when phones with foreign subscriptions are used in USA may be easier to understand and accept even if they will also cause dissatisfaction. They could also point to a solution (e.g. if the user is told the problem is because they are texting on a phone from outside the country, they may know to seek out a phone for that country to report their emergency).

Technical note: As above, the nature of SMS may limit the technical feasibility of the user expectations with respect to bounce-back messages during domestic and foreign roaming.

Feedback on progress: Users expect to receive responses to SMS within a certain amount of time. If a response is delayed, they may become anxious and assume that contacting 9-1-1 has failed. The expectation is that, even if it takes time to process a text message to 9-1-1, users are kept abreast of what is happening via appropriate text responses.

Technical note: There are different causes for why SMS responses may be delayed, and these need to be assessed on a case-by-case basis. For any such cause, the responsibility must be determined, and the technical feasibility of an SMS response informing the user of the delay must be evaluated. For example, delays that happen due to internal processes in the PSAP cannot be handled in the same way as delays that happen due to the technology used for setting up a session between the TCC and the PSAP (e. g. a TTY call); and these in turn are different from delays caused by the store-and-forward nature of SMS.

3 Originating Devices and Network

This section responds to the key questions posed by the EAAC regarding the role of originating networks and devices in Text Messaging to 9-1-1, at a minimum, via short message service (“SMS”) while also considering the key assumptions outlined by Working Group 1.⁷ The EAAC recommends that the FCC recognize the capabilities and limitations of wireless service provider SMS offered to wireless subscribers as an emergency communications service; lead consumers, industry and public safety in managing stakeholder expectations; and ensure adequate liability protections are available to support the provisioning of Text messaging-to-9-1-1 service accordingly.

⁷ See FCC EAAC, Resolution regarding Text Messaging to 911 (adopted March 30 2012); Presentation of EAAC Working Group 1, Text-to-911 Solutions to 911 Interim to NG911 (September 14, 2012) (“EAAC WG1 Presentation”).

Which networks should support 9-1-1 mobile text?

Utilizing the existing standards-based SMS network architectures and capabilities currently offered by wireless service providers to wireless subscribers, with minimal modifications or alterations, would be the most technically and economically feasible way to ensure rapid deployment of SMS-based text messaging to 9-1-1 (“SMS-to-911”).

Significant modifications or alterations to the existing wireless service provider SMS network standards and architecture would create technical and economic feasibility issues because such changes require development of new chipsets and firmware for mobile devices and equipment, and revision of existing network standards and elements in the core wireless networks. Modifications efforts would take many years and delay implementation of SMS-to-911 by which time messaging capabilities for Next Generation 9-1-1 (“NG911”) could have already been developed and deployed.

While SMS-to-911 services can lay a foundation for consumer education and network and PSAP capabilities that may carry forward into NG911 deployment, a near term deployment of SMS-to-911 services should not divert industry, public safety, and government resources from further developing and deploying NG911. All stakeholders should be encouraged to continue standards development for an NG911 environment to support necessary emergency communications capabilities on future services, networks and equipment.

What are the originating network issues around other text formats (e.g. Over-the-Top or Proprietary Solutions)?

Consistent with Section 2 of the CVAA, originating network service providers and equipment manufacturers can only support emergency communications over the services and equipment offered directly to wireless subscribers.⁸ While wireless mobile devices may support Over-The-Top (“OTT”) and other third party proprietary IP-based text applications that offer “SMS”-like messaging services, third party OTT and other SMS-like messaging service providers should be responsible for compliance with a standards-based approach to offer Text Messaging to 9-1-1 services. By complying with standards based approach, third party provided OTT and other SMS-like messaging services should independently support Text Messaging to 9-1-1 capabilities.

What are the originating network issues around SMS?

The technical and operational issues surrounding the use of SMS as an emergency communications service are well documented.⁹ Consistent with these issues, utilizing

⁸ Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 124 Stat. 2751, Section 2(a)-(b) (2010) (as codified in various sections of 47 U.S.C.) (“CVAA”); *see also*, *Implementation of Sections 716 and 717 of the Communications Act of 1934, Report & Order and Further Notice of Proposed Rulemaking*, FCC 11-151 ¶ 45 (rel. October 7, 2011).

⁹ *Facilitating the Deployment of Text-to-911 and Other Next Generation Applications, Framework for Next Generation 911 Deployment*, Notice of Proposed Rulemaking, FCC 11-134 ¶ 53 (Sept. 22, 2011); *see also*, *Text Messages in a PSAP Environment*, APCO Emerging Technologies (rel July 30, 2012) available at <http://psc.apcointl.org/wp-content/uploads/APCO-Emerging-Tech-Text-to-911-Final1.pdf> and *Texting to 9-1-1*:

standards-based SMS network architectures and capabilities currently offered by wireless service providers to subscribers on their home networks (i.e. not roaming on another wireless carrier network), with minimal modifications or alterations, would be the most technically and economically feasible way to ensure rapid deployment of SMS-to-911. Any solution that requires significant modifications to existing wireless network architectures and standards will delay deployment of SMS-to-911 and consume resources needed for NG911 deployment.

In order to encourage the timely deployment of text messaging to 9-1-1 services, the EAAC has assumed that a text-messaging to 9-1-1 solution should not be subject to all of the requirements of either voice 9-1-1 calls or long-term solutions (i.e. NG9-1-1) so that it can be implemented in the near term and without extensively reworking carrier, handset, or PSAPs systems.¹⁰ Given this assumption, the following issues should be recognized as necessary to support the near-term deployment of SMS-to-911:¹¹

Wireless Subscribers with SMS Capable Handsets: Under existing wireless network architectures and standards for SMS, wireless carrier SMS text message services are subscription-based and only service-initialized SMS-capable mobile devices have SMS text message functionality.

For this reason, wireless subscribers must have an active text message service plan. In addition, support of SMS-to-911 on non-service initialized (“NSI”) mobile devices is not feasible because, at a minimum, support for NSI mobile devices would require new standards and significant modifications to handsets already available to end users and the wireless originator network radio and core infrastructure.

Therefore, requiring an “all 911 calls” feature for SMS-to-911 service would create lengthy delays in its implementation. In addition, an “all 911 calls” feature for SMS-to-911 and non-service initialized mobile devices would impose significant technical and operational burdens on PSAPs.¹²

Home Network v. Roaming: Just as SMS text messaging services are unique to each wireless service provider, each implementation of SMS-to-911 will be unique to a wireless service provider’s capabilities. In inter-carrier domestic or international roaming situations, SMS-to-911 cannot, at this point, be supported because addressing the “Text Originator Information” and “Home Network Control” issues would require significant modifications to the wireless originator network and core infrastructure that will ultimately delay the deployment of SMS-to-911 services. Roaming capabilities should be addressed in NG911 multimedia emergency services.

Text Originator Information: SMS text messages that are sent between wireless service provider roaming partner networks (i.e. inter-carrier roaming) do not always pass

Examining the Design and Limitations of SMS, 4G Americas (October 2010) available at <http://www.4gamericas.org/documents/SMS%20to%20911%20White%20Paper%20Final%20October%202010.pdf>

¹⁰ *Supra* n.1, EAAC WG1 Presentation, Slide 3.

¹¹ The EAAC believes specific technical issues should be addressed through the FCC’s open proceeding on NG911 and text to 911.

¹² See e.g. *Petition for a Notice of Inquiry Regarding 911 Call-Forwarding Requirements and Carriers’ Blocking Options for Non-Initialized Phones*, Notice of Inquiry, FCC 08-95 (Rel. April 11, 2008).

through “Text Originator Information”, including location information. An SMS cannot be routed to the appropriate PSAP without text originator information.

Home Network Control: SMS text messages are under home operator control which means that SMS messages are routed to a wireless subscriber’s home network for processing regardless of the network and location from which the SMS message originated. In an international roaming situation, home network operator control is problematic because the home operator network is outside the U.S. and is not capable of routing a SMS to the appropriate U.S.-based PSAP.

Intermixed Voice and SMS: Many users would benefit from a possibility to have SMS intermixed with a voice call. The current wireless carrier network architectures route voice calls and SMS separately. The voice call path to the PSAP is already implemented. It would therefore be a significant modification to restructure these connections to allow integration with the SMS path to handle the two paths as one call with one PSAP operator. It is therefore most realistic to not implement this integration until in NG9-1-1.

Bounce-Back Notifications of SMS-to-911 Availability: A wireless subscriber should receive an automatic reply to their SMS-to-911 message if SMS-to-911 services are not supported by the appropriate PSAP or the wireless network over which the subscriber originates an SMS-to-911 message.

Given the issues to generally support SMS-to-911 in a roaming situation, the feasibility of a bounce back message an inter-carrier domestic or international roaming scenario requires further study by an appropriate standards body, such as the ATIS-TIA Joint SMS standard body.

Non-Proprietary Solutions: In order to ensure the timely and consistent deployment of SMS based Text to 911, industry and public safety cannot be expected to support diverse and proprietary Text to 911 solutions. The joint ATIS-TIA industry standards for wireless carrier native SMS-to-911 is one non-proprietary solution that can encourage the timely deployment of Text to 9-1-1, support a flexible and interoperable environment for multiple wireless carrier and public safety network configurations, and define capabilities necessary to support SMS-to-911, including standardized interfaces from the originating network to the PSAP, obtaining coarse location for routing, handling bounce-back messages, and managing the text message dialog between the originator and PSAP. Once finalized, the joint ATIS-TIA SMS-to-911 industry standard will be an open standard available for any entity to adopt such as Over-The-Top providers.

Do phones or networks or both block three digit 9-1-1 SMS addresses? (if phones - how many phones?)

SMS-to-911 should be supported by a 3-digit SMS-capable wireless handset, including feature phones and smartphones. Using any number besides 9-1-1 creates the problem that the wireless subscriber will have difficulty remembering it when they have an emergency.

However, some legacy devices may not support the ability to send to a 3-digit SMS code. Originating networks and devices should be permitted to implement a longer SMS code overlay that has the same functionality as the 3 digit code. Both the 3-digit and longer codes could be implemented by providers that may have devices that will not support 3-digit short codes.

Options for location provision.

The joint ATIS-TIA industry standards for wireless carrier native SMS to 9-1-1 is one solution that can encourage the rapid deployment of Text to 9-1-1, support a flexible and interoperable environment for multiple wireless carrier and public safety network configurations, and define capabilities necessary to support SMS to 9-1-1, including standardized interfaces from the originating network to the PSAP, obtaining coarse location for routing, handling bounce-back messages, and managing the text message dialog between the originator and PSAP. Once finalized, the joint ATIS-TIA SMS-to-911 industry standard will be an open standard available for any entity to adopt

Managing Public Expectations is Critical during Interim Text-to-911 Availability

The FCC should take a lead role and work with consumers, public safety, the wireless industry and other stakeholders to develop a public education program that appropriately explains the capabilities and limitations of SMS-based Text to 9-1-1 service. As part of managing public expectations, a text originator should receive a response notifying the originator if Text to 9-1-1 service is not available.

4 Transport Networks including TCC

5 PSAP end

There are a number of administrative and operational considerations for the PSAP text delivery and response end of the Interim Text process. Impacts and issues requiring careful planning and implementation relate to overall Interim Text solution characteristics and to local 9-1-1 Authority and PSAP processes and procedures.

Text Control and Delivery:

Several optional methods have recently been described for delivering SMS to a 9-1-1 Center:

- Delivery to the PSAP call handling equipment via Automatic Call Distribution system (where installed) is preferable.
- Delivery to a standalone web based interface is workable as a temporary step, however taking calls for an extended period of time outside of the normal call handling system will present challenges & risks. Maximum integration with existing PSAP call handling and logging systems is desirable.
- Delivery via gateway at a local, multi-PSAP IP network where available (could include early NG9-1-1 systems).
- Delivery via SMS conversion to TTY Baudot.

Operational Considerations:

- National level solutions should not rely on the delivery of SMS calls to PSAPs via 10 digit telephone lines.
- National level solutions should not require a voice call to be placed to 9-1-1 before SMS is engaged (make a voice dial then switch to text. This is used in some local solution but it is not feasible for national use).
- Delivery to the PSAP should be in the manner that the PSAP or multi-PSAP 9-1-1 Authority designates and is part of a standards process (e.g. each carrier cannot have a different solution at each PSAP, which would force the PSAP to support multiple different solutions).
- The national level Interim Text to 9-1-1 solution must assure that the process for gathering information from 9-1-1 Authorities as to their operational readiness and delivery preferences is not cumbersome. A process must be identified by which a single point of contact is established to gather this information from 9-1-1 Authorities. This could be the TCC vendor, or a Public Safety organization that already has national PSAP data. Consideration should be given to leveraging the existing processes for wireless routing spreadsheets that PSAPs must currently use.
- A continuous connection between the text caller and the destination PSAP during an active text call should be maintained for a period of time defined by the PSAP unless the PSAP ends the connection. However, the connection between the text caller and a specific PSAP call taker may not be able to be maintained throughout the conversation.
- To the extent technically feasible (realizing SMS is a store and forward system), the interim text to 9-1-1 solution should assure that text messages are delivered to the PSAP in chronological order.
- If the TCC does not see a reply from the PSAP or its equipment for an SMS to 9-1-1 message within configurable amount of seconds of TCC release toward the PSAP, a notification should be sent to the text caller that their text has been sent to the 9-1-1 center and a reply is pending. (Reply wording to be defined)
- The interim text to 9-1-1 solution should provide an automatic message to any texter who attempts to text 9-1-1 in an area that does not support receiving 9-1-1 SMS messages. The message should be standardized between carriers in as much as possible and should clearly advise the caller that they must use an alternate method such as a voice call, relay, or TTY call to reach 9-1-1.
- The message transport system should provide a message to a text caller indicating that a communication path has been terminated by a PSAP.

9-1-1 Authority Actions:

- All 9-1-1 authorities and PSAPs should proactively assess the proposed delivery interface options for interim text to 9-1-1 and whether or not they are prepared to handle text messages. PSAPs who determine they are not in a position to handle text messages by the designated deployment timeframe of the national level interim solution are encouraged to make alternate arrangements for a designated PSAP to handle their text messages, and to proactively research what it would take to accept these messages in the near future.
- PSAPs should be responsible for designating whether or not they wish to receive text messages and, if so, their preference for delivery method according to the accepted standard. 9-1-1

Authorities or PSAPs should formally request SMS to 9-1-1 delivery to their PSAP(s) and identify the desired delivery method(s).

- The PSAP should also designate the minimum period of time that the TCC should maintain text interaction during periods of inactivity between a caller and the receiving PSAP. The minimum period of time for inactivity will eventually need to be standardized on a national level. This standardization will be determined by stakeholders from both public safety and the private sector and should be based upon testing with consumers and operational experience.
- 9-1-1 Authorities or PSAPs should be responsible for keeping their text delivery preferences up to date with the service provider, TCC vendor, or other central point for interim SMS to 9-1-1 services. PSAPs should assess requirements for logging of text messages and assure that the delineation of responsibility for this functionality is clearly defined.
- PSAPs that are handling multiple calls during busy times may decide to terminate a text connection to assure that their telecommunicator are able to handle other incoming emergency calls in a timely manner. The decision as to how long a PSAP telecommunicator stays “ready” to accept text from a specific caller should be based on local policy.
- The method by which a PSAP is/is not able to handle delivery of other services such as medical pre-arrival instructions must be implementation specific and based on local policy.

FCC Considerations:

- The FCC should facilitate (to the extent possible) a method to channel PSAP text readiness and delivery preferences through a single point of contact process.
- The FCC should facilitate public education (directly and/or through Public Safety organizations) on the national level interim solution. Consumers must be made aware that proprietary text systems may not be compatible with the national level interim solution. Focused education should be provided for the deaf, hard of hearing and speech disabled community of users to assure they understand the capabilities of the interim solution and to assure they understand that TTY will continue to be supported for those that rely on it.
- The FCC should work with appropriate industry representatives to identify and maintain a public list of any wireless handsets that will not support SMS to 9-1-1 text capabilities or identify feasible alternative technology solutions, such as a four digit code. The FCC should work with appropriate industry representatives to allow a solution via educational or technical means.
- The FCC should characterize what the expectation is of the many proprietary systems that have been purchased/implemented in different areas to handle text to 9-1-1. PSAPs may choose to implement other text systems as long as it does not preclude their ability to support the national level SMS interim solution. Educational efforts will be complicated by the use of multiple solutions.
- Other than deployment or maintenance testing, text to 9-1-1 test messages should not be required and should not traverse the network to the PSAP call takers. If it is deemed necessary to provide the ability for the general public to “test” text to 9-1-1 capabilities, an alternate method must be applied to handle this text to 9-1-1 verification process. Further investigation of the options is required.

What are the secondary deployment priorities for national level SMS to 9-1-1?

- An open standardized interface between the TCC and legacy E9-1-1 PSAP call handling software. In a pre-NG9-1-1 system the call handling software is often referred to as CPE (Customer Premise Equipment)
- The capability to open an audio path with the caller's device would greatly improve the PSAPs ability to determine the nature of the incident being reported. Further study of the technical feasibility of this feature is required.
- A method by which to incorporate 9-1-1 text calls into a PSAP's call handling analysis system (typically a management information system –MIS) so they can effectively analyze any impact to the quality of the service they provide.
- An E9-1-1 class of service that will allow PSAPs to differentiate an SMS message from other voice or TTY calls. This may be possible for only some interface methods.
- The capability for Intra-PSAP transfers (i.e. transfer between telecommunicators or to a supervisor in the same PSAP (or 9-1-1 system) is required to assure effective operations. Presumably a function of the Public Safety equipment or delivery network.
- Ability to transfer text calls to other text capable PSAPs or other text capable systems outside the 9-1-1 service system. Presumably a function of the Public Safety equipment or delivery network.
- Ability of the text call-handling application to handle multiple texts dialogs simultaneously.

If implementation at legacy PSAPs is voluntary, should a time limit be imposed wherein a legacy PSAP or designated authority is mandated to accept text calls other than current TTY Baudot?

While a time limit should not be imposed prior to initial implementation, there should be a deadline for a PSAP to designate an answering point. Within 6 months of interim text to 9-1-1 solution, a time line for PSAP acceptance should be established, based upon initial implementation experiences. The following are PSAP operational considerations that should be incorporated into the ongoing dialogue of interim text deployment:

- While it is a fact that TTY is mandated for all PSAPs, it is not accessible to the general public. The impact of interim text, even when converted to TTY, cannot be equivalently compared. Appropriate solutions should be pursued for national deployment; consideration of time mandates is not appropriate at this early stage of development. There are several operational impacts that must be taken into account before solutions are actively pursued:
- The text solutions based on SMS do not support voice in the same call as SMS. There are users who wish to use a combination of voice and text when communicating with a PSAP (i.e. voice in one direction and text in the other). . The industry should research if this technology can be made available for deployment within interim solutions. The PSAP call handling interface should have the capability to indicate when it is possible to use voice in parallel with interim text calls, when it is not possible , and when voice is possible but with functional limitations. Further discussion should take place to identify specific requirements for these capabilities.
- Small PSAPs with 1-2 individuals on duty, who must answer incoming calls as well as dispatch and manage radio traffic will be increasingly challenged to multitask and manage incoming 9-1-1 text calls. Simultaneously “talking and typing” has become a common multitasking skill for

many PSAP personnel. Text calls however will require multitasking at a different level. A telecommunicator who must track unit status by typing information into a CAD system will not be able to simultaneously “type” responses to a caller via text. If a national level interim text solution is backed by the FCC, these PSAPs will need time to identify and implement procedures.

- Some PSAPs may consider using a regional approach whereby a single PSAP handles text calls for a group of other PSAPs. This type of mutual aid scenario will take time to analyze and implement.
- Not all PSAPs have TTY built into their call handling systems or CAD, many still use legacy standalone TTY devices. This does not lend itself to a productive way to implement text for the general public.
- Some PSAPs do not have computerized call handling systems or CAD. Telecommunicators in these cases use hand written processes to create incidents and track emergency responders in the field.
- Once national level interim text is adopted and a number of PSAPs start making the transition to use it, we should review what can be done to encourage adoption by the PSAPs that will initially *not* be able to opt in. The interim solution will be around for many years so we need to do everything we can to further its use.

Are there limitations that will be encountered in an interim text solution that will impact the level of service that is typically provided during a voice based 9-1-1 call?

- Services typically provided by secondary PSAPs or other dispatch centers may not be available during an interim solution via text if the secondary PSAP does not support text. Primary and secondary PSAP interaction via voice communication may be required. (Primary PSAP would respond to texter).
- Services provided by other partner agencies such as transportation agencies, poison control and language services may not be available if those entities cannot support a text conversation or if the PSAP is unable to create a multiparty communication with them.
- Emergency Medical Dispatch (EMD) instructions as provided for voice calls may not be initially available or may not be able to be provided in a timely manner to text based callers. It is understood that EMD is not uniformly available to TTY callers. The FCC must be cognizant of the fact that the general public may expect this level of service to be provided if they text an emergency to 9-1-1.

6 Issues

6.1 National Interim Text and Vendor Proprietary Solutions

More than a dozen proprietary text solutions, often involving additional multimedia data features, have appeared during the 2011-2012 timeframe, been marketed to PSAPs and Counties, and implemented in localized areas around the USA. Other than those that utilize a

silent 9-1-1 voice call to establish initial connection to a PSAP, these solutions often have no interaction with the E9-1-1 systems, rather using Internet or other separate networking and proprietary software and often separate hardware at the PSAP to accomplish their user to PSAP interaction.

With the coming presence of a national SMS interim text solution, and without any other actions, users would be confronted with a situation where their local PSAP or County may (or may not) have implemented one of several proprietary solutions, quite possibly applicable only within their jurisdiction. When the mobile user moves out of the area where they know a specific proprietary solution is available, they would not know if, or which, proprietary solution is applicable at their new, current location. However, the national SMS solution is likely to be available to them there.

The user will likely try their usual “at home” method, then find that it doesn’t work and be forced to manually start a new emergency communication sequence, losing valuable time in an emergency situation. It may be possible to integrate some proprietary solutions into the national TCC routing and delivery process, but that will require more investigation and the determination of whether the solution providers are willing to take that approach. There may also be other options, which again will require more investigation.

The FCC should work with public safety, DOJ and hearing and speech disability community to work with commercial vendors to ensure their software solutions meet expectations for emergency services. A combination of Public Safety, FCC, DOJ, and hearing and speech disability groups could likely use “directive influence” in negotiating with vendors for any changes to their software solutions.

Without such an approach nationally, text users will increasingly continue to be uncertain as to what works where, with an attendant risk of delayed emergency contact and response.

6.2 Responsibilities and Policies

6.3 Future Considerations

7 Actions needed to build this (what is not already in place)

7.1 Education and Outreach

8 Conclusion

9 Recommendations

Appendix A: Glossary

Appendix B: Use Cases for SMS-based text-to-911

Revision History

Date	Version	Description
10/26/12	0.01	Initial document skeleton built on the report outline which was extracted from the web page as of 26 October 2012 12:57 PM Pacific.
11/15/12	0.02	Incorporated the following contributions: <ul style="list-style-type: none"> - Document titled "121113 EAAC SG1 Sec 4 Originating Network Devices (DRAFT)" from Matt Gerst. - Document titled "PSAP Capabilities section 5 draft 111112" from Roger Hixson. - Document titled "SC1 Report 6.1 draft 111112" from Roger Hixson.
11/18/12	0.03	This version was created by Gunnar Hellstrom to incorporate his content for Chapter 4 Transport. This version was sent by Gunnar to only a limited set of individuals. The next version created by the Editor will be given version number 0.04 in order to avoid confusion of multiple different versions numbered 0.03.
11/28/12	0.04	Incorporated the following: <ul style="list-style-type: none"> - Section 4 Transport from version 0.03 - Revisions from the EAAC1 conference call on November 28th 2012 - Section 2 User Needs and Constraints distributed by Christian Vogler via email on November 28th 2012.
12/3/12	0.05	This version incorporates the results of the EAAC subgroup 1 conference call on Monday, December 3 rd 2012. The subgroup review on December 3 rd was based upon a marked up version from Gunnar Hellstrom and Matt Gerst called "EAAC WG1 Text to 9-1-1 Recommendations ver 0.04 gh2 mg" which was emailed by Matt Gerst on Monday December 3 rd 2012 at 10:46 AM Pacific. This version also incorporates Christian Vogler's contribution to section 7.1 which is titled "SG1-7.1" which Christian emailed on Monday December 3 rd 2012 at 7:50 AM Pacific. The following Editor's Assignments were also completed: <ul style="list-style-type: none"> - Created a new Section 6.3 Future Considerations using two topics and associated bullet items from Section 5 PSAP end - Moved the last bullet of Section 5 PSAP end to the end of Section 7.1 Education and Outreach.
12/5/12	0.06	This version incorporates the results of the EAAC subgroup 1 conference call on Wednesday, December 5 th 2012 and also includes the following contributions: <ul style="list-style-type: none"> - Use case contribution from Christian Vogler sent via email on Wednesday December 5th 2012 at 7:56 AM Pacific - Overview section from Matt Gerst sent via email on Wednesday December 5th 2012 at 7:32 AM Pacific
12/12/12	0.07	This version incorporates the results of the EAAC subgroup 1 conference calls on December 11 th and 12 th 2012 and also includes comments and proposed modifications that were distributed via email.

Date	Version	Description
12/13/17	0.08	<p>This version incorporates the results of the EAAC subgroup 1 conference call on December 13th 2012 and is the draft version of the report to be presented to the EAAC on Friday December 14th 2012. Sections 1, 2, 5, and 6.1 were updated on today's conference call and will be included. The content of the following sections has been deleted since the open issues have not been resolved for inclusion in version:</p> <ul style="list-style-type: none"> - Section 4 Transport including TCC - Section 6.3 Future Considerations - Section 7.1 Education and Outreach - Appendix A Glossary - Appendix B: Use Cases for SMS-based text-to-911