Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications	)	PS Docket No. 11-153
	)	
	)	
Framework for Next Generation 911 Deployment	)	PS Docket No. 10-255

POLICY STATEMENT AND SECOND FURTHER NOTICE OF PROPOSED RULEMAKING

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I. INTRODUCTION

1. One of the core missions of the Federal Communications Commission is promoting the safety of life and property of the American public through the use of wire and radio communications.[1] Consistent with that overarching obligation, the Commission has specific statutory responsibilities with respect to 911 service.[2] As mobile wireless communications are becoming increasingly central to the day-to-day lives of Americans, a growing percentage of 911 calls originate on wireless networks.[3] At the same time, current trends in mobile wireless usage have shown continued evolution from a predominantly voice-driven medium of communication to one based more on data transmissions.[4] In light of these trends and the importance of ensuring effective 911 service – particularly for those who cannot access 911 call centers with a voice call – we believe that text-to-911 capability is a necessary first step in the development of Next Generation (NG) 911 capabilities.[5]

2. At the broadest level, access to 911 is a core value that translates across communications platforms, including text applications, and should not be lost or devalued as technology changes. In 2011, the Commission began this proceeding to bridge the gap between the habits and needs of the texting public and the services supported by wireless carriers and interconnected text providers.[6] In 2012, the Commission proposed a framework to ensure that all consumers would be able to send emergency texts to 911 regardless of the texting service provider they use.[7] Today, we provide further guidance and insight into our objective for text-to-911 as part of our effort to help secure a modern, NG-capable 911 infrastructure that keeps pace with the capabilities of an IP-enabled wireless ecosystem and supports the texting capabilities that consumers have embraced. In particular, in the Policy Statement below, we express our goal that both Commercial Mobile Radio Service (CMRS) providers and other providers of

[1] 47 U.S.C. § 151.

[2] *See* Improving 911 Reliability, *Notice of Proposed Rulemaking,* 28 FCC Rcd 3414, 3444 ¶ 76 (2013) (citing 911 statutes). *See also Nuvio Corp. v. FCC,* 473 F.3d 301, 311 (D.C. Cir. 2007) (Kavanaugh, J., concurring).

[3] Improving the Resiliency of Mobile Wireless Communications Networks, *Notice of Proposed Rulemaking,* PS Docket No. 13-239, 28 FCC Rcd 14373, 14380-81 (2013) (citing study that 75 percent of 911 calls in California came from wireless phones).

[4] Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, *Sixteenth Report,* WT Docket No. 11-186, 28 FCC Rcd 3700, 3711 (2013). From 2009 to 2011, average minutes of use per subscriber per month, a measure of voice usage, continued to decline, while U.S. mobile data traffic increased 270 percent from 2010 to 2011, having more than doubled each year for the past four years covered by this report. *Id.*

[5] For a description of NG911, *see* Legal and Regulatory Framework for Next Generation 911 Services, Report to Congress and Recommendations, at § 3,1,2 (Feb. 22, 2013), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-319165A1.pdf (last viewed Jan. 31, 2014) (*NG911 Report*).

[6] In the Matter of Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment, PS Docket No 11-153, PS Docket No. 10-255, *Notice of Proposed Rulemaking*, 26 FCC Rcd 13615 (2011) (*2011 Notice*).

[7] In the Matter of Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment, PS Docket No 11-153, PS Docket No. 10-255, *Further Notice of Proposed Rulemaking*, 26 FCC Rcd 15659 (2012) (*2012 Further Notice*).

interconnected text messaging services should enable consumers to send text messages to 911 and we encourage industry-developed solutions to achieve this goal.[8]

3. Further, we adopt below a Second Further Notice of Proposed Rulemaking seeking further comment on the proposed timeframe and several aspects of implementation, particularly relating to the technical ability of interconnected text providers to comply with a text-to-911 mandate. We also seek further comment on several issues that we anticipate will be part of the long-term evolution of text-to-911, though we do not propose to require their implementation by a date certain. These include: (1) developing the capability to provide Phase II-comparable location information in conjunction with emergency texts; (2) delivering text-to-911 over non-cellular data channels; and (3) supporting text-to-911 for consumers while roaming on CMRS networks.

4. In seeking additional information in this Second Further Notice, we recognize that there is already a robust record on many of the issues and proposals that were presented in both the *2011 Notice* and the *2012 Further Notice*. In posing these further questions, we seek to supplement the record as to the specific issues identified herein.

II. BACKGROUND

5. Americans are increasingly relying on text as an alternative to voice for everyday communications.[9] Current reports indicate that 91 percent of American adults own a cell phone,[10] and that of those cell-phone owning consumers, 81 percent use their phones to send and receive text messages.[11] Texting "continues to be one of the most prevalent cell phone activities of all time" and is particularly ubiquitous among younger cell phone users.[12] The median number of texts sent by those 12-

[8] As noted below, we are particularly pleased that certain carriers have taken a leadership role on this issue and worked with public safety organizations to establish a May 15, 2014, deadline by which those carriers would offer text-to-911 service nationwide. Nothing in this item is intended to replace or otherwise upset that deadline.

[9] In general, "text messaging" refers to any service that allows a mobile device to send information consisting of text to other mobile devices by using domestic telephone numbers. Examples of text messaging include Short Message Service (SMS), Multimedia Messaging Service (MMS), and "interconnected text" applications. SMS is a text messaging service component of communications systems that uses standardized communications protocols to enable wireless and fixed devices to exchange messages no longer than 160 characters. *See* 3GPP, 3GPP Specification Detail, Technical Realization of the Short Message Service (SMS), available at http://www.3gpp.org/DynaReport/0340.htm. MMS is a standard way to exchange messages that include multimedia, such as photos and videos along with text, between wireless devices. *See* Open Mobile Alliance, Multimedia Messaging Service V1.3, *available at* http://technical.openmobilealliance.org/Technical/release_program/mms_v1_3.aspx. "Interconnected text" applications use IP-based protocols to deliver text messages to a service provider and the service provider then delivers the text messages to destinations identified by a telephone number, using either IP-based or SMS protocols. *See also* Facilitating the Deployment of Text-to-911 & Other Next Generation 911 Applications, PS Dockets No. 11-153, 10-255, Report and Order, 28 FCC Rcd 7556 (2013) (*Bounce-Back Order*). *See also* Gahran, Amy, *One-Third of Americans Prefer Texts to Voice Calls*, CNN, Sept. 22, 2011, available at http://www.cnn.com/2011/09/22/tech/mobile/americans-prefer-text-messages/ (last viewed Jan. 28, 2014); Kerr, Dara, *Teens Prefer Texting Over Phone Call, Email*, CNET, Mar. 19, 2012, available at http://news.cnet.com/8301-1023_3-57400439-93/teens-prefer-texting-over-phone-calls-e-mail (last viewed Jan. 28, 2014/); Angela Chen, *Crisis Centers Turn to Texting to Help Teens,* The Wall Street Journal, Aug. 20, 2013, *available* at http://online.wsj.com/news/articles/SB10001424127887324139404579017013609343306 (describing how national help lines are training staff and volunteers in the art of counseling via text message or online chat) (last viewed Jan. 28, 2014).

[10] *See* "Cell Phone Activities 2013," Pew Internet & American Life Project (Sept. 19, 2013), *available at* http://pewinternet.org/Reports/2013/Cell-Activities/Main-Findings.aspx (last viewed Dec. 30, 2013).

[11] *Id.*

[12] *Id.*

17 years of age in 2011 was 60 text messages per day, with 63 percent of teens indicating texting as a daily activity.[13]

6. Moreover, "over-the-top" (OTT) texting applications are growing increasingly popular and have already eclipsed short messaging service (SMS) text messages provided by wireless carriers in terms of volume.[14] In mid-2013, one third-party text messaging application reported more than 250 million active users, transmitting more than 18 billion messages per day.[15] In mid-2013, the six most popular mobile chat applications averaged nearly 19 billion messages each day, compared to 17.6 billion SMS messages.[16] In 2014, one report projected that over the top text messaging will outpace SMS text messaging by 50 billion to 21 billion.[17]

7. In September 2011, the Commission released the *2011 Notice*, which sought comment on a number of issues related to the deployment of Next Generation 911 (NG911), including how to facilitate the deployment of text-to-911.[18] In the *2011 Notice*, the Commission observed that sending text messages, photos, and video clips has become commonplace for users of mobile devices on 21st century broadband networks, and that adding non-voice capabilities to our 911 system will significantly improve emergency response, save lives, and reduce property damage.[19] Moreover, the Commission stated that

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[13] *See* "Teens, Smartphones and Texting", Pew Internet & American Life Project (March 19, 2012), *available at* http://www.pewinternet.org/~/media//Files/Reports/2012/PIP_Teens_Smartphones_and_Texting.pdf (last viewed Dec. 30, 2013).

[14] "Over-the-top" generally refers to applications that operate on Internet protocol (IP)-based mobile data networks and that consumers can typically install on data-capable mobile devices. In contrast, SMS requires use of an underlying carrier's SMS Center (SMSC) to send and receive messages from other users. Multi-media Messaging Service (MMS)-based messaging makes use of the SMSC but also involves the use of different functional elements to enable transport of the message over IP networks. Over-the-top text applications enable consumers to send text messages using SMS, MMS or directly via IP over a data connection to dedicated messaging servers and gateways. Over-the-top texting applications may be provided by the underlying mobile wireless provider or a non-affiliated third-party, and may be "interconnected" or "non-interconnected." *See* Facilitating the Deployment of Text-to-911 & Other Next Generation 911 Applications, PS Dockets No. 11-153, 10-255, *Report and Order*, 28 FCC Rcd 7556 (2013) (*Bounce-Back Order*).

[15] Winkler, Rolfe, "WhatsApp Surpasses 250 Million Active Users" (June 20, 2013) WALL STREET JOURNAL, *available at* http://blogs.wsj.com/digits/2013/06/20/whatsapp-surpasses-250-million-active-users/ (last viewed Jan. 6, 2014); Guynn, Jessica, "The war for mobile messaging is on," (May 11, 2013), LOS ANGELES TIMES, *citing* Informa Research Services, *available at* http://articles.latimes.com/2013/may/11/business/la-fi-mobile-messaging-20130512 (last viewed Jan. 6, 2014).

[16] Reisinger, Don "Chat apps now more popular than SMS worldwide," CNET *citing* Informa Research Services, (*available at* http://news.cnet.com/8301-1035_3-57581830-94/chat-apps-now-more-popular-than-sms-worldwide/ (cited applications include WhatsApp, Blackberry Messenger, Viber, Nimbuzz, Apple's iMessage, and KakaoTalk). *See also* Meyer, David, "Chat apps have overtaken SMS by message volume, but how big a disaster is that for carriers?", citing Informa Research Services, *available at* http://gigaom.com/2013/04/29/chat-apps-have-overtaken-sms-by-message-volume/ (last viewed Jan. 6, 2014).

[17] David Meyer, *supra* n. 16.

[18] *2011 Notice*, *supra* n. 6.

[19] *Id.* at ¶¶ 1-2. In emergency situations, there are various scenarios where text messaging may have advantages over voice. For example, during high usage periods where callers find it difficult to establish connections for voice calls due to network congestion, Short Message Service (SMS) text messages – which require much lower signal levels – are often successfully transmitted. BRETSA Reply Comments at 6-7. Text messaging also holds obvious advantages for those with certain disabilities (*e.g.*, those who are deaf, hard of hearing, or have speech disabilities), and texting may provide an avenue for contacting emergency services when the use of voice communications could itself prove dangerous (*e.g.*, during a hostage situation or a home break-in). Public safety entities, however, have continued to stress text-to-911 as a complement to the voice 911 system, and emphasize the benefits of using voice calls to 911 whenever possible. *See, e.g., Carrier-NENA-APCO Agreement* at 3.

incorporating text and other media into the 911 system will benefit: (1) the public in terms of the ability to access emergency help, both for people with disabilities and for people in situations where placing a voice call to 911 could be difficult or dangerous; and (2) PSAPs by providing them with better information that can be synthesized with existing databases to enable emergency responders to assess and respond to emergencies more quickly and effectively.[20]

8. In December 2012, AT&T, Sprint Nextel, T-Mobile, and Verizon entered into a voluntary agreement with the National Emergency Number Association (NENA) and APCO International (APCO) in which each of the four carriers agreed to provide text-to-911 service by May 15, 2014, to PSAPs that are capable of, and request to receive, text-to-911 service (Carrier-NENA-APCO Agreement).[21] The signatory carriers made certain commitments related to their text messaging services, including implementation of the service to a PSAP "within a reasonable amount of time" not to exceed six months after such PSAP makes a "valid" request of the carrier.[22] The agreement also stated that, "consistent with the draft ATIS Standard for Interim Text-to-9-1-1, the PSAPs will select the format for how messages are to be delivered" with incremental costs for delivery being the responsibility of the PSAP.[23] Under the terms of the agreement, carriers were to meet these commitments "independent of their ability to recover these associated costs from state or local governments."[24] The carriers committed to working with NENA, APCO, and the Commission to develop outreach for consumers and support efforts to educate PSAPs.[25] The carriers' commitments also did not extend to customers roaming on a network.[26]

9. The Carrier-NENA-APCO agreement followed on a number of successful trials of text-to-911, and voluntary reports submitted to the Commission since the agreement detail the ongoing activities of the four carrier-signatories in this regard. As of December 31, 2013, Verizon Wireless reports "some 46 different jurisdictions are using one of the text-to-911 options that Verizon currently supports (up from 37 in October 2013), and several additional deployments are currently scheduled through 2014."[27] AT&T has reported that it is in the process of launching a standards-based trial service for text-to-911 in the state of Tennessee for the end of the first quarter of 2014, and also reports a statewide six-month trial with the state of Vermont, which launched on August 23, 2013.[28]

10. Shortly after the signing of the Carrier-NENA-APCO Agreement, the Commission adopted the *2012 Further Notice*,[29] which proposed, *inter alia*, to require all CMRS providers, as well as other providers of interconnected text messaging services, to support the ability of consumers to send text messages to 911 in all areas throughout the nation where PSAPs are also prepared to receive the texts.[30] The *2012 Further Notice*'s baseline requirements were modeled on the Carrier-NENA-APCO Agreement, and the Commission sought comment on whether all carriers, including regional, small and rural carriers,

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[20] *Id.*

[21] *See 2012 Further Notice, Appendix C.*

[22] *Carrier-NENA-APCO Agreement* at 2.

[23] *Id*.

[24] *Id*. at 3.

[25] *Id*.

[26] *Id*.

[27] Verizon Quarterly Report at 1, PS Docket No. 11-153 (Jan. 2, 2014).

[28] AT&T Quarterly Report at 1, PS Docket No. 11-153 (Jan. 2, 2014); AT&T Quarterly Report at 1, PS Docket No. 11-153 (Oct. 1, 2013).

[29] *See 2012 Further Notice*, *supra* n. 7.

[30] *2012 Further Notice* at 15660 ¶ 2.

and all "interconnected text" providers can achieve these milestones in the same or similar timeframes.[31] In this respect, the *2012 Further Notice* recognized prevalence of SMS-based messaging, but also noted the trend towards IP-based messaging platforms.[32] The *2012 Further Notice* proposed that the Commission apply any text-to-911 rules it may adopt to both SMS and IP-based text messaging services. The Commission noted that, to the extent that consumers are gravitating to such IP-based applications as their primary means of communicating by text, they may reasonably come to expect that these applications support text-to-911.[33] The Commission also recognized the public interest benefits associated with enabling IP-based messaging users to send texts to 911 from those applications—applications with which the user is familiar—as consumer familiarity is vital in emergency situations where seconds matter.[34] To that end, the *2012 Further Notice* sought to ensure that consumers ultimately have access to the same text-to-911 capabilities on the full array of texting applications that they use for everyday communication – regardless of provider or platform.[35]

11. In May 2013, the Commission issued a *Report and Order* requiring CMRS providers and interconnected text providers to supply consumers attempting to send a text to 911 an automatic "bounce back" message when the service is unavailable.[36] In requiring this bounce back messaging, the Commission found a "clear benefit and present need" for persons who attempt to send emergency text messages to know immediately if their text cannot be delivered to the proper authorities, citing evidence that many consumers already believe they can send text messages to 911.[37] The Commission further determined that in emergency situations, where call volumes can spike and networks become congested, consumers are often unable to place voice calls, and that in these instances it is particularly important that consumers seeking emergency assistance by text receive a notification when text-to-911 functionality is not available.[38] Evidence in the record further compelled the Commission to extend the bounce back obligation to providers of interconnected text messaging service, citing the proliferation of smartphones and significant volume of messages using non-SMS or non-MMS applications that ride on cellular data

[31] *Id*. at 15661 ¶ 3.

[32] *Id.* at 15661-662 ¶¶ 5-6.

[33] *See, e.g., supra* n. 15. *See also*, Kanal, Natasha, "WhatsApp user base doubled to 430 million since August" *available at* http://tech.firstpost.com/news-analysis/move-over-sms-whatsapp-now-processes-50-billion-messages-a-daywhatsapp-processes-50-billion-messages-day-may-overtaken-sms-216627.html (last viewed Jan. 28, 2014) (reporting WhatsApp user base of 430 million and messaging volume of 50 billion text messages per day); TCS Ex Parte (Jan. 24, 2014) (detailing users and volume for various messaging services); *see also* TRIAD Research Group, *A Survey of Residents in the North Central Texas Council of Governments and Tarrant County 9-1-1 Districts Regarding Awareness of 9-1-1 Services*, December 2011, at 4, 18-19 (finding that "31 percent of respondents think they can send a text message from their cell phone to 9-1-1 which is nearly double compared to [a similar survey conducts in] 2009 (16%)"). *See also* Letter from David H. Tucker, Executive Director, Vermont E-9-1-1 Board, to Marlene Dortch, Secretary, Federal Communications Commission, PS Docket No. 11-153 (Nov. 13, 2013) (providing statistics on total texts received by Vermont PSAPs and types of emergencies reported, including reporting of burglaries, domestic violence situations and suicide attempts).

[34] *Id.* at 15661-2 ¶ 6.

[35] *Id.*

[36] *Bounce-Back Order*, n. 9, *supra*. On reconsideration, the Commission clarified the scope of the bounce-back rule when emergency text messages are placed by consumers roaming on another carrier's network. *See* Facilitating the Deployment of Text-to-911 & Other Next Generation 911 Applications, PS Dockets 11-153, 10-255, *Order on Reconsideration*, 28 FCC Rcd 14422 (2013).

[37] *Bounce-Back Order,* 28 FCC Rcd at 7561 ¶ 13, *citing 2012 Further Notice* at ¶ 7 n. 7; Letter from Christy Williams, 9-1-1 Program Manager, NCTCOG, to David S. Turetsky, Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission (Nov. 1, 2012).

[38] *Bounce-Back Order* at 7561 ¶ 13.

networks.[39] The Commission noted specifically that, "[a]s these applications proliferate, consumers are likely to assume that they should be as capable of reaching 911 as any other telephone number."[40]

III. DISCUSSION

12. The trends and developments recounted above affirm and reflect our fundamental view of the importance of text-to-911 functionality. Specifically, text-to-911 capability could be invaluable for individuals who are deaf, hard of hearing, or have speech disabilities. Currently, approximately 15 percent of the United States population, or 34.5 million people, are deaf or hard of hearing, and that number is on the rise. Approximately 7.5 million people have speech disabilities. Text-to-911 can also serve a critical function in rare situations where a voice call to 911 might be dangerous (*e.g.*, a hostage situation, during a home invasion); when voice calls are being blocked due to unusual network congestion; and in areas where voice coverage is unavailable (but data may be able to get through).[41]

13. Today, however, text-to-911 functionality is not available in most areas and is not implemented in most texting applications. Accordingly, we take this opportunity to state our goals with respect to text-to-911 for CMRS and interconnected text providers operating in this space and our intention to monitor industry developments in light of those objectives. While we are not adopting rules today, we believe it is both timely and important to articulate the baseline policy guideposts that will form the foundation of future consideration on this topic.

A. Policy Statement

14. The Federal Communications Commission believes that every CMRS carrier and every provider that enables a consumer to send text messages using numbers from the North American Numbering Plan should support text-to-911 capabilities.

15. The Commission intends to pursue a technologically-neutral approach that provides platform-independent norms for all stakeholders, based on high-level functional standards set by the relevant stakeholders in industry and the public safety community. Stakeholders should develop implementation details on a consensual basis in a manner that enables fact-based monitoring of progress by the relevant industry bodies, 911 and public safety authorities, and regulatory agencies. If the multi-stakeholder process achieves these values in a timely manner, we envision that any overarching functional rule adopted by the Commission would not need to impose additional obligations beyond those agreed to in the multi-stakeholder context. Rather, we expect that it would be needed only to codify the multi-stakeholder standard so it applies to all providers equally (including future entrants into the market) in a manner that brings regulatory clarity so that all participants in the 911 ecosystem can plan accordingly.

16. The Commission is particularly pleased that certain carriers have taken a leadership role on this issue and worked with public safety organizations to establish a May 15, 2014, deadline by which those carriers would support text-to-911 service nationwide. We encourage CMRS and interconnected text providers that are not parties to the Carrier-NENA-APCO Agreement to work with the public safety community to develop similar commitments to support text-to-911 in a timely manner, so that all consumers will be assured access to text-to-911 regardless of what text provider they choose.

B. Second Further Notice of Proposed Rulemaking

17. In order to facilitate the deployment of text-to-911 functionality, the Commission is continuing to consider further regulatory steps in this proceeding. To that end, this Second Further Notice

[39] *Id*.

[40] *See id.* at 7559-7561 ¶¶ 9-13 (discussing the record evidence regarding consumer expectations).

[41] APCO Comments at 1-2; *see also* Intrado Comments at 1 ("Text-to-911 provides critical access to 911 for the nation's hearing and speech disabled citizens and offers everyone the ability to reach emergency assistance when a voice call is not a safe option.").

of Proposed Rulemaking seeks comment on certain aspects of the technical provision of text-to-911 by text providers, with particular emphasis on interconnected text providers.

1. Timeframe for Implementation of Text-to-911 Capability

18. We seek comment on a proposal that text-to-911 capability should be made available by all text providers no later than December 31, 2014, and should be provided within a reasonable time after a PSAP has made a valid request for service, not to exceed six months. We seek specific comments on this tentative conclusion, particularly with respect to small or rural CMRS carriers and interconnected text providers, none of whom are parties to the Carrier-NENA-APCO Agreement. Would PSAPs and consumers benefit from our establishment of a uniform deadline of December 31, 2014, for both CMRS and interconnected text providers?

19. With respect to CMRS providers other than the four signatories to the Carrier-NENA-APCO Agreement, we believe that implementation by December 31, 2014, is achievable. First, the progress made by the four major providers illustrates the technical feasibility of text-to-911 implementation for other CMRS providers, including small and rural providers. The adoption of the ATIS standard for text-to-911 over the SMS platform also satisfies a condition that some small carriers cited as a pre-condition to their ability to implement text-to-911.[42] Indeed, small and rural providers may be able to achieve cost savings in their implementation by leveraging some of the text-to-911 databases and other infrastructure that text-to-911 vendors will have in place by May 15, 2014 to support provision of text-to-911 by the four major providers. Thus, providing small and rural providers with a small amount of additional time beyond the May 2014 timeframe should provide an opportunity for them to undertake the necessary preparatory action and spread their costs over a longer period, while still providing timely and tangible consumer benefits. The Competitive Carriers Association (CCA) also suggests that smaller carriers can meet a December 31, 2014 deadline for responding to a valid PSAP request for text-to-911 service.[43] We seek comment on these views.

2. Timeframe for Interconnected OTT Text Providers

20. With respect to interconnected text providers, however, we also must take into account the unique technical complexities they may face in implementing text-to-911. We therefore seek comment on whether such factors weigh in favor of interconnected text providers being subject to an alternative timeframe. In general, interconnected over-the-top text providers can function both when a connection to an underlying CMRS network is present and when it is not. However, those technical issues that arise from the routing of texts from Wi-Fi locations need not be resolved at this time because we do not propose that they be implemented as part of this initial phase of text-to-911 implementation. Commenters indicate that interconnected text providers will likely have to resolve other issues, such as OTT client identifiers that would enable "callback" from PSAPs, IP addressing, security challenges,[44] and operating system (OS) service layer access to enable routing 911 texts through different functional components in the existing SMS architecture.[45]

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[42] *See* NTCA Reply Comments at 5 (arguing for a delayed implementation deadline to afford technical organizations "sufficient time to create an industry standard, and enable third parties to develop and deploy solutions with the support of larger carriers who have already committed to support a voluntary roll out of the new service").

[43] CCA *Ex Parte* at 1 (filed Mar. 12, 2013). We also note that in July, 2013, CCA and Intrado announced a strategic partnership "to bring text-to-9-1-1 solutions" to its small and rural carrier members. *See* CCA and Intrado Partner to Bring Comprehensive Text-to-9-1-1 Solution to CCA Members, *Press Release* (July 24, 2013) *available at* http://competitivecarriers.org/press/rca-press-releases/cca-and-intrado-partner-to-bring-a-comprehensive-text-to-9-1-1-solution-to-cca-members/9111999 (last viewed Jan. 9, 2014).

[44] *See* MediaFriends (Heywire) Ex Parte at 1 (filed Dec. 13, 2013).

[45] *See* TCS Ex Parte, Attachment, at Slides 14, 16 (filed Dec. 11, 2013).

21. Comments to date from public safety entities argue that, even considering the technical challenges, "interconnected text providers should be capable of meeting newly-imposed text-to-9-1-1 obligations on relatively short timeframes."[46] Nevertheless, NENA recommends a two-tiered approach to compliance deadlines for "two classes of [originating service providers (OSPs)], interconnected and integrated text providers, aimed at accommodating differences in interconnected text OSPs' platforms."[47] NENA further recommends that the Commission "strictly limit the additional time granted to interconnected text OSPs to emphasize the public interest and necessity embodied by these new obligations, and to minimize the extent of consumer confusion that could arise during the period between the two deadlines."[48] Also, APCO encourages the Commission to establish firm dates "to ensure meaningful progress and ultimate compliance" for these entities.[49]

22. Other commenters take a contrary view and assert that too many technical considerations remain to be resolved before the consideration of any deadline. Comcast contends that it is "premature for the Commission to establish a deadline for interconnected text message providers to equip their services with a text-to-911 mechanism."[50] The VON Coalition contends that generating accurate location information requires the input of multiple participants in the network ecosystem, particularly for third-party texting applications that do not have access or control of the underlying network.[51] The VON Coalition also contends that GPS alone and commercial location based services are not sufficient in the 911 context, noting that manual mapping of Wi-Fi routers, for example, may not be routinely updated or audited.[52] VON does not view these challenges as "necessarily insurmountable" and notes that its "members already are participating in industry working groups . . . to find avenues to attempt to overcome them."[53] VON submits that such approaches "will require significant cooperation across a broad set of entities (e.g., providers of Wi-Fi access, wireless services, OTT application developers, emergency services vendors and providers) and standardized global approaches."[54] ITI asserts that "[m]andating any technology requirements in application design would be difficult and costly for companies that design one application to run across multiple devices and platforms."[55]

23. A critical factor affecting the feasibility of the timeframe for interconnected text providers to implement text-to-911 at the same level of functionality as CMRS providers is how quickly interconnected text providers can implement a technical solution that will support "coarse" location of

[46] NENA Comments at 5. *See also id*. at 7-8 (adding that because "interconnected text providers already exchange texts with integrated text messaging providers. This indicates that interconnected services are able to deliver texts using standards-compliant forms and protocols similar to – if not identical – the ones used by integrated Text-to-911 service providers, some of whom are also SMS service platform providers."). *See also* MediaFriends (Heywire) Ex Parte at 1 (Jan. 24, 2014)("MediaFriends implemented an SMS911 bounce back function in 2012 as part of a larger effort to support SMS911 in its architecture in preparation of market desires for SMS911 services based on a 'cloud' product architecture to facilitate the greatest flexibility for future enhancements. The architectural underpinnings positions MediaFriends to efficiently and expeditiously conform with directives regarding SMS 911 requirements and serves the public interest.").

[47] NENA Comments at 5.

[48] *Id*.

[49] APCO Comments at 3.

[50] Comcast Reply Comments at 6.

[51] VON Coalition Comments at 9-10.

[52] *Id*. at 10.

[53] *Id*. (referring to the industry working group ETSI M493).

[54] *Id*.

[55] ITI Reply Comments at 3-4.

application users so that their texts can be routed to the correct PSAP.[56] As discussed below, there are several technical models exist that could support providing coarse location of interconnected text users in the near-term when an underlying connection to a CMRS network is present.[57]

3. OTT Text-to-911 Message Delivery Models

24. While these models are not the only architectural approaches that interconnected text providers might take, we describe the key aspects of three approaches to solicit comment on them and other potential technological solutions that support imposing a near-term time frame for interconnected text providers. We seek comment on the technical feasibility for interconnected text providers to implement these models by the proposed deadline and request comment on how other factors, such as necessary software changes, handset development cycles, and security issues may affect the timeframes that we would adopt.

a. Access CMRS Messaging Platform via API

25. We recognize that interconnected text providers face an array of choices in considering methods to relay a text to a PSAP.[58] As an initial matter, although OTT providers' applications are primarily designed to use IP-based protocols to deliver text messages to destinations identified by a telephone number, they can, however, utilize SMS-based protocols and route the text over the underlying carrier's SMS network.[59] As illustrated in Figure 1, an OTT texting application can be programmed to recognize that the user is sending a text message to the text short code "911" and automatically invoke the wireless device's native SMS application programming interface (API) for sending SMS messages.[60] This functionality is distinct from the application's normal operating mode which is generally designed to route a text via a means other than the native SMS capability of the device. Upon invoking the native SMS texting application, the text-to-911 message will be handled by the underlying wireless carrier, *i.e.*, the text will be routed through the carrier's (or its agent's) Text Control Center (TCC), which is the functional element of the Short Message Service Center (SMSC) dedicated to routing texts to the appropriate Public Safety Answering Point (PSAP).

[56] *See also, infra,* ¶¶ 41-44.

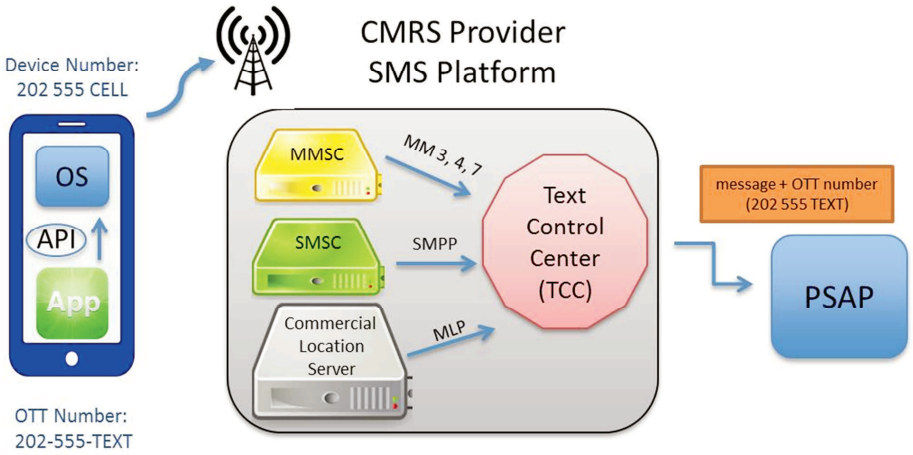
[57] *See infra*, ¶¶ 25-33.

[58] While we use the term "OTT" in discussing the technical protocols that an application may use to route a text message to a PSAP, in terms of feasibility for implementation by December 31, 2014, our proposal remains focused on the subset of OTT providers that meet the definition of interconnected text providers. *See supra* n 9.

[59] *See, e.g.*, TCS Ex Parte, Attachment (filed Dec. 11, 2013).

[60] An application programming interface is a set of software instructions on how software components should interact with each other.

Figure 1 – CMRS network-based Model



26. In this model an SMSC cannot distinguish generally between a SMS message generated by an OTT application and the native SMS API. Consistent with the SMS-to-911 standard, the carrier's TCC would then forward the text along with coarse location information to the PSAP. Because of this, we consider it unlikely that consumers in the near term will expect text-to-911 to work in those circumstances where cellular network connectivity is not available. We believe this method is available to OTT providers today and that it can be implemented by December 31, 2014, through relatively minor enhancements to their APIs. We seek comment on this view.

27. We note that our view on the feasibility of interconnected text providers using this method to support text-to-911 is premised on the continued availability of CMRS providers' SMS networks to handle texts from OTT providers. We note that the model described here assumes that CMRS providers would provide access to their SMS networks for texts to 911 generated on OTT applications. Some CMRS providers already afford this access to some OTT applications, and the model posits that CMRS providers could receive requests from other OTT providers for similar access to the CMRS provider's native texting application APIs. CMRS providers would need to devote technical and product management resources to meeting such requests and to ongoing maintenance and performance issues. We also note that the average CMRS provider offers a wide range of wireless devices to consumers, each having somewhat distinct technical parameters and programming to support third party applications. Thus, a CMRS provider would have to coordinate with each handset manufacturer and associated operating system provider to ensure that each device model that is capable of supporting an interconnected text messaging application would also be capable of interfacing with the CMRS provider's underlying native texting application and SMS or messaging platform. We seek comment on these observations. What specific considerations should we take into account regarding how CMRS providers would implement a requirement to support OTT provider's use of their native messaging application? Beyond what we have described herein, what specific actions must a CMRS provider take to afford access to its underlying SMS or messaging platform? Are there any specific industry best practices or guidelines presently in place that may serve to provide a framework for the coordination between CRMS providers and OTT providers?

28. In suggesting that a SMS default for interconnected text providers can provide a viable near term solution for text-to-911, we emphasize that we are not proposing that such a relationship would occur absent reasonable compensation to the underlying network provider or similar arrangements. Nor do we propose to constrain CMRS providers from transitioning their SMS platforms to new technologies if they choose to do so at some point in the future. Rather than requiring CMRS providers to maintain their SMS platforms in perpetuity for the sole purpose of supporting text-to-911 for third-party

interconnected text providers, we expect that interconnected text providers will need to develop alternative text-to-911 delivery methods as technology evolves. We seek comment on these views.

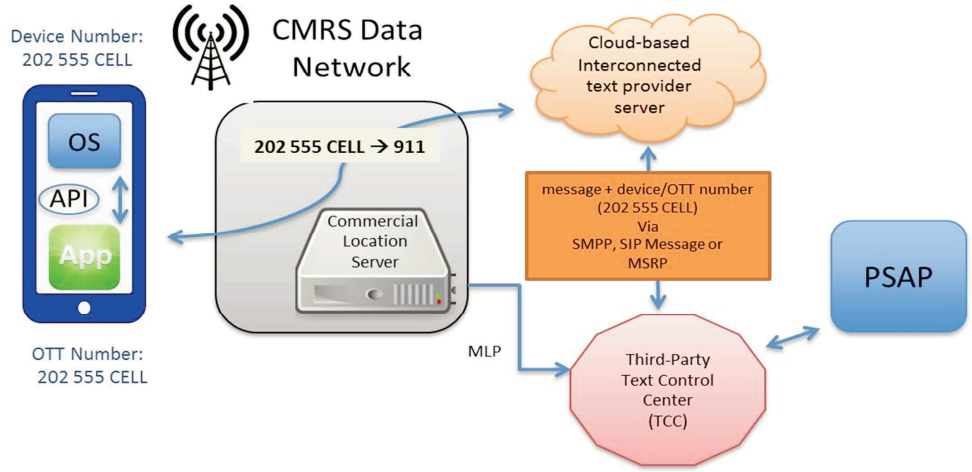
29. We believe that, if interconnected text providers have access to the API on CMRS carrier devices, those issues may be resolvable for interconnected text applications riding over the SMS platform. We finally note that resolving such issues may be dependent on CMRS carriers not impeding interconnected text providers' capability to deliver text-to-911 messages. We therefore propose adopting a requirement that CMRS carriers not block the access to capabilities that would enable interconnected text providers to provide consumers using their OTT applications to send texts to 911. We seek comment on these views. We also invite comment on whether this proposal and the measures necessary for interconnected text providers to take would require timeframes other than the uniform one that we propose. If so, what would alternative timeframes would be reasonable?

b. Network and Server Based Models

30. We also present three additional models by which an OTT provider could deliver a text message using APIs that route the text via an Internet connection, either over a wireless carrier's data network or a non-CMRS Wi-Fi network, to the interconnected text provider's server. In these scenarios, the OTT provider's text handling server recognizes that the text message is addressed to 911 and then interacts with a third-party TCC to route the text to a PSAP. In each model, it is assumed that the user has a phone number assigned to the user by the wireless carrier. Generally, and consistent with our definition of a covered text provider, when a user subscribes to an interconnected text messaging service, the OTT provider will provision the user with a ten digit phone number to enable the user to send and receive texts from other texting application users. In doing so, the OTT provider enables the user to avoid relying on the wireless carrier's SMS network to route text messages.

31. Figure 2 represents a basic server-based model for routing a text message to 911 and assumes that the OTT application uses the same phone number as the device itself. In this case, the OTT service provider receives the text at its server and passes the originating phone number and message to a third-party TCC. It could use a number of messaging protocols to effectuate the delivery to the TCC.[61] The TCC draws location from a commercial location service, just as for the CMRS SMS service, to acquire the location of the mobile device.

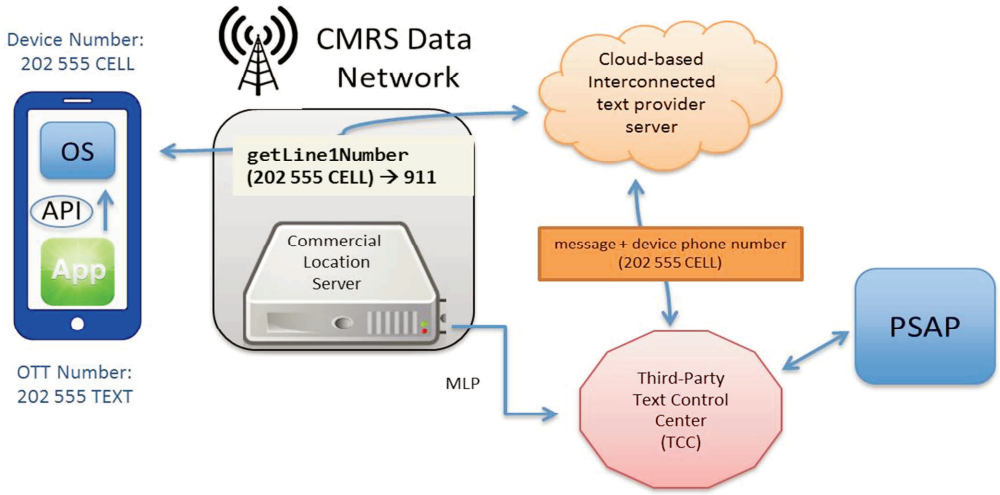
Figure 2 – Server-based Model



[61] Examples include Short Message Peer-to-Peer (SMPP), Session Initiation Protocol (SIP) MESSAGE, or Message Session Relay Protocol (MSRP).

32. The model shown in Figure 3 relies on using the number assigned by the OTT provider to route the text to 911. In our illustration, the texting application invokes a system call on the API[62], obtains the phone number of the mobile device and conveys it via the protocol message sent to the OTT provider's server. The provider, as before, then sends the message through a third party TCC, which in turn invokes the commercial location service and routes the text to the appropriate PSAP.

Figure 3 – Server-based Model Relying on Device Phone Number



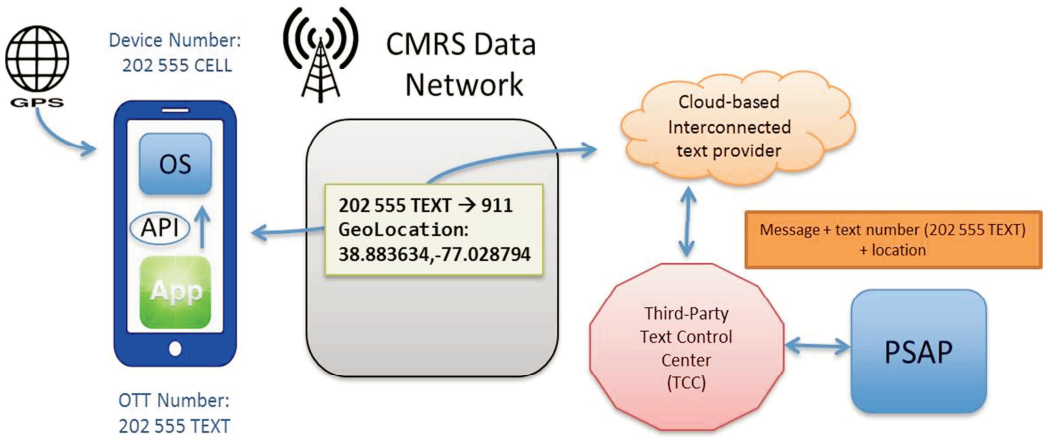
33. The third server-based solution, as depicted in Figure 4, relies on the location API in the mobile device, rather than a commercial location service, to obtain the user's location. Many OTT text applications already obtain the user's location for non-emergency purposes. In the example shown, the OTT text application includes GPS-based location information with the text content and routes the text through its server to the TCC.[63] The use of device location would likely offer higher accuracy in many cases and may meet the Commission's location accuracy requirements for handset-based location delivery.[64] In addition, this solution does not rely on cellular data connectivity and continues to work as long as the OTT text application can connect to the Internet.

[62] For example, on wireless devices using the Android Operating System, the system call would be the line of code "getLine1Number( )", which would retrieve the phone number string, for example, the MSISDN for a GSM phone.

[63] We note that the SMS-to-911 Standard J-STD-110, which specifies the TCC functionality, does not currently define an interface protocol to retrieve location-based services location information (*e.g.*, GPS derived latitude and longitude), but re-using the NENA i3 Message Session Relay Protocol (MSRP) with the geolocation header field is one possible way of meeting the needs of this approach.

[64] We recognize that device-based location is typically not tested for meeting those requirements.

Figure 4 – Server-based Model Relying Location API



These models are not exhaustive of those available to OTT providers to route texts to PSAPs; in fact, an application could implement both a mobile-based solution and a server-based solutions. This would ensure that text messages to 911 can reach the TCC whether SMS or Internet data service is available. We seek comment on whether the models described above are consistent with a commercial implementation to support text-to-911. What other models might an OTT provider consider using to route a text to 911? Which functions are OTT providers capable of handling within their servers and which functions are they most likely going to have to secure access to third party providers to support routing a text to a PSAP?

4. Costs

34. As discussed above, interconnected text providers face a number of technical issues in being able to send text messages from its users to PSAPs. Specifically, the VON Coalition notes:

> Resolving these third-party gateway technical challenges would not only take time, but once resolved, would impose significant costs on providers of software applications – many of which are small businesses offering innovative IP-based capabilities at little or no cost to consumers. The introduction of third-party gateways and vendors (and, thus ongoing payments to and coordination with those vendors) into the application provider's service – something that would be necessary only if providers were required to try to bootstrap the legacy TDM 911 system onto Next Generation IP services – introduces complexities and points of possible failure, as well as costs the developer did not anticipate. VON understands that many third-party vendors typically charge monthly per-subscriber fees (regardless of whether or how many subscribers ever use the application to try to reach 911), in addition to upfront set-up costs. Such per-subscriber costs, or even per-transaction costs, could quickly tip an otherwise successful business model on its head as the costs approach the revenues (if any) made by the application provider."[65]

On a related note, Sprint notes that "[w]hile interconnected text providers will incur costs associated with compliance, CMRS carriers are also likely to incur additional costs because CMRS carriers will need to provide network and device capabilities to interconnected text providers."[66] Sprint also argues that

[65] VON Coalition Comments at 12.

[66] Sprint Comments at 7.

"CMRS carriers should not be expected to incur such costs without reimbursement from interconnected text providers, since any such costs will be undertaken to facilitate compliance by a third-party."[67]

35. We recognize that a requirement on interconnected text providers would impose additional costs. We seek comment on the implementation costs associated with the models discussed above. For example, with respect to the mobile-based model, we estimate that a requirement would impose an implementation cost of approximately $4,500 per provider per platform, for an industry-wide cost of approximately $555,000. We came to this conclusion using the Constructive Cost Model II (COCOMO II), which can provide an estimate of the cost, effort, and schedule for planning new software development activity.[68] The model analyzes a number of variables concerning software size, specifically source lines of code, whether new, reused, modified, or some combination thereof; software scale drivers; software cost drivers related to product, personnel, operating system platform specifics, and project specifics; and software labor rates.[69] We seek comment on this analysis, and we encourage those who disagree with this analysis to present their own methodology, analysis, and conclusions. Similarly, we seek comment on the costs for CMRS providers to enable OTT application interfacing with native text messaging applications. What software changes, if any, must a CMRS provider make to its underlying text messaging application to support the OTT application? Finally, what reoccurring expenses would there be that are not accounted for by COCOMO II, such as compliance and operating costs, including payments to acquire network and device capabilities from CMRS providers or others, depending on solution?

36. Beyond the estimated costs identified herein related to the mobile-based model, are there other initial and ongoing costs that interconnected text providers would incur to support text-to-911 service, particularly the server-based models that we have identified? For text routing purposes, would interconnected text providers be able to use the same vendors that CMRS providers use? If so, would their routing costs be similar to those involved for CMRS providers? Would a per-incident service model be feasible for smaller interconnected text providers, and if so, would it be preferable to other alternatives? What costs would be associated with a consumer outreach effort from interconnected text

[67] *Id*.

[68] *See* University of Southern California, Center for Systems and Software Engineering, COCOMO II, *available at* http://csse.usc.edu/csse/research/COCOMOII/cocomo_main.html (last viewed Jan. 8, 2014).

[69] The COCOMO II web-based tool requires one to enter the total new source lines of code and the cost per person-month in dollars and to set a number of software scale and cost drivers at subjective levels (e.g., very low, low, nominal, high, very high, extra high). *See* COCOMO II, Constructive Cost Model, available at http://csse.usc.edu/tools/COCOMOII.php (last viewed Jan. 8, 2014). This model estimates that a one-time cost of $4,541 will be incurred, assuming that (a) 100 new source lines of code must be added to an existing application in order to meet the a text-to-911 mandate (which we believe is a high estimate, based on our own research), (b) the software labor rate is $19,435 per person-month, and (c) all cost drivers in the model are set to "nominal." Cost per Person-Month is estimated as follows: average software engineer/developer/programmer total mean annual salary of $93,280 (Bureau of Labor Statistics (BLS), May 2012); a cost per person-month of approximately 173 hours; mean hourly rate of $44.85 (BLS, May 2012) plus an estimated overhead factor of 2.5, or $112.13 per person hour. ($93,280 X 2.5)/12 = $19,435 cost per person-month. For mean annual wage of a software developer of applications, *see* Bureau of Labor Statistics, Occupational Employment Statistics, Occupational Employment and Wages, May 2012, *available at* http://bls.gov/oes/current/oes151132.htm (last viewed Jan. 8, 2014). In general, overhead costs are between 150–250 percent of the cost of a direct labor hour. *See* Cynthia R. Cook, John C. Graser, RAND, Military Airframe Acquisition Costs (2001) *available at* http://www.rand.org/content/dam/rand/pubs/monograph_reports/MR1325/MR1325.ch9.pdf (last viewed Jan. 8, 2014). Moreover, we estimate that at present, there are approximately thirty interconnected text messaging services, offering their services on anywhere from one to five different operating system platforms. To account for future proliferation of platform offerings, we estimate that all service providers would offer their service across four main operating system platforms and that each of them would incur a one-time cost of $4,541 to add 100 new source lines of code to an existing application, as discussed above. The resulting nationwide implementation cost for these affected applications would therefore be approximately $544,920 (i.e., 30 x 4 x $4,541).

providers to educate consumers about text-to-911? What other potential costs to interconnected text providers should the Commission consider, if any? Since many interconnected text providers offer their services at no charge and they may incur significant costs to implement text-to-911,[70] will interconnected text providers have to start charging for these services or are there other ways to obtain revenues to cover these costs? What effect will this have on future innovation and competition?

5. Relay Services

37. Individuals who are deaf, hard of hearing, or have speech disabilities may elect to use existing text-to-voice relay services (*e.g.*, IP relay) to contact 911 when they need to communicate with PSAPs.[71] These existing relay services do not provide direct delivery of text to PSAPs. Moreover, many commenters have asserted, and we agree, that relay services have distinct limitations and are not an acceptable substitute for direct text access once text-to-911 capabilities become available in a jurisdiction.[72] Nevertheless, relay providers are uniquely situated to ensure that deaf, hard of hearing, or speech-impaired individuals can reach emergency personnel because only relay providers have the capability to ensure that if a consumer attempts to text a PSAP that is not text-to-911 ready, the message will still be delivered (as a relay message). We seek comment on whether relay service providers — to the extent they offer applications that can send text messages to North American Numbering Plan numbers — should develop direct text-to-text services to support communication with PSAPs that are text-capable, while expediting text-to-voice relay calls where the PSAP is not capable of receiving text messages directly from a caller. Is it technically possible for current relay technologies to support pass-through of a text to a PSAP without relaying the call? Could relay service providers re-use some or all of text control center (TCC) infrastructure being built for text-to-911 services? Are there other ways in which relay providers could improve or augment their services to support text-to-911 and the broader transition to NG911? What avenues might relay providers use to recoup their costs for providing this service?

6. PSAP Implementation

38. In the *2012 Further Notice*, the Commission acknowledged the disparate capabilities of PSAPs in terms of accepting and processing text messages to 911, and the need for the Commission to take these differing capabilities into account.[73] The Commission also proposed a set of near-term solutions that would allow non-NG 911 capable PSAPs to handle text messages without requiring significant up-front investments or upgrades, including the use of web browsers, gateway centers, conversion of text messages to TTY calls, and state or regional aggregation of text-to-911 processing.[74]

39. Commenters confirmed that significant differences persist in PSAP readiness. Fairfax County, for example, asserts that it "cannot currently accept 9-1-1 messages sent via text" and that it "cannot predict when a transition from current 9-1-1 to NG9-1-1 will occur because the initial planning

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[70] VON Coalition Comments at 12.

[71] IP Relay is a form of telecommunications relay service that permits an individual with a hearing or a speech disability to communicate in text using an Internet Protocol-enabled device via the Internet, rather than using a TTY and the public switched telephone network. *See* 47 C.F.R. § 64.601(17). In IP Relay, text typed by the calling party is spoken by the relay center Communication Assistant to the called party, while spoken words from the called party are transcribed as text and sent back to the calling party.

[72] *See, e.g.*, Telecommunications for the Deaf and Hard of Hearing, Inc. et al., *Ex Parte*, PS Docket Nos. 10-255, 11-153, 12-333, at 5 (Dec. 13, 2012).

[73] *2012 Further Notice* at 15709 ¶ 127.

[74] *Id.* at 15709-15712 ¶¶ 128-143. We also note the recent announcement by TCS of a product called "EMedia" designed to streamline, aggregate, process and route text messages PSAPs using TTY, web or text enabled PSAP equipment. *See* TeleCommunications Systems Eases NG9-1-1 Transition with EMedia, *available at* http://online.wsj.com/article/PR-CO-20140128-909621.html (last viewed Jan. 28, 2014).

for a transition to NG9-1-1 is just beginning in Virginia."[75] Some commenters oppose action by the Commission to compel carriers to support text-to-911 absent a parallel mandate for PSAPs, or otherwise urge the Commission to condition the timing of any mandate on a PSAPs ability to accept text messages.[76]

40. We expect that broad support of text-to-911 will aid PSAPs that are beginning the NG911 transition or considering implementation of text-to-911, and that PSAPs may be more willing to do so given the availability on the provider side of this important service, in that budgeting authorities for states and localities will have more certainty to help justify expenditure of public funds. However, we recognize that barriers to PSAP implementation of these functionalities remain. We are interested in learning more about what those barriers are and what additional measures we can take consistent with our authority that may encourage more rapid uptake by PSAPs or other emergency response authorities to ensure that the all participants in the 911 ecosystem are meeting consumer expectations. How can the Commission assist in promoting action by PSAPs and others to overcome funding or other implementation obstacles? Is there outreach or other activities that the Commission or other organizations can undertake to facilitate this?

7. Phase II-Equivalent Location for Covered Text Providers

41. *CMRS Providers*. We appreciate the advocacy of public safety entities for the delivery of Phase II level location information[77] and recognize that with currently available technology CMRS carriers face technical difficulties in providing Phase II equivalency for text-to-911 messages.[78] The Carrier-NENA-APCO Agreement, the ATIS standard J-STD-110, and a large part of the record suggest that only coarse (cell sector) location should be used for current text-to-911 purposes. However, in the long term cell sector information alone neither offers optimal public safety benefits nor resolves the discrepancy in the ability of first responders to locate persons with hearing and speech disabilities compared to the ability to locate persons making voice 911 calls.[79] Recent submissions to the record and the capability of smart phones to access and transmit precise Phase II level location information offer promise that text-to-911 message can be sent with more accurate location information to PSAPs. For example, at least one CMRS carrier offers subscribers "thin-client" applications that they can download on their CMRS-capable devices. Potentially, the application can acquire the Phase II level information from the smartphone's user plane platform and send the more precise location through the text control center (TCC) to the appropriate PSAP. However, the PSAP may have to "re-bid" to obtain the Phase II longitude- latitude information.[80] We seek comment on this and similar capabilities to provide Phase II equivalent location information.

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[75] Fairfax Comments at 2.

[76] NTCA Comments at 2-4; NTCA Reply Comments at 2; CTIA Reply Comments at 4-7.

[77] *See* 47. C.F.R. § 20.18(e) (requiring covered entities to provide latitude and longitude information for calls to 911 within certain specified accuracy standards); s*ee also* APCO Comments at 4-5, NENA Comments at 10, Fairfax Comments at 7, King County Reply Comments at 1-2.

[78] *See* AT&T Comments at 20, RTG Comments at 3-4, Sprint Reply Comments at 2-3, T-Mobile Comments at 2.

[79] *See* BRETSA Comments at 13; Fairfax Comments at 6-7; NENA Comments at 10; King County Reply Comments at 1-2.

[80] S*ee*, *e.g.*, Graziano, Dan, BGR, "Verizon Announces iMessaging Clone for Android, iOS and Web," (Mar. 22, 2013), *available at* http://bgr.com/2013/03/22/imessage-clone-verizon-messages-app-391793/ (last viewed Jan. 8, 2014); Verizon, "Family Locator FAQs," *available at* http://support.verizonwireless.com/support/faqs/FeaturesandOptionalServices/family_locator.html (last viewed Jan. 8, 2014). "Re-bid" in this context means that a PSAP must re-query the carrier's location database, either manually or automatically.

42. Several commenters submit that the Commission "should leave the development of precise location information capability for text-to-911 to further product and application development and related standards work using LTE and NG911 technologies."[81] Nevertheless, we continue to emphasize that the long-term objective is for text messaging services, whether from CMRS carriers or interconnected text providers, to provide for Phase II equivalent location information with text-to-911 calls. We believe that a combination of Commission initiatives and industry efforts can achieve this goal. For example, concerning the capabilities of CMRS providers to deliver Phase II quality location with text-to-911, the current CSRIC IV Working Group 1 – NG-911 is studying and is due to report in March 2014 on the technical feasibility of including enhanced location information in text messages sent to PSAPs.[82] In addition, as noted below, the NENA i3Message Session Relay Protocol (MSRP) could be re-used to retrieve GPS-derived latitude-longitude information.[83] We seek comment on these and similar efforts of standards-bodies pursuing such solutions and look forward to further input from public safety entities and industry that will foster those efforts. At the same time, we invite comment on what might be reasonable timeframes to achieve more precise location capabilities in sending text messages to 911. We stress that one of the critical long term goals to enable PSAPs to dispatch first responders more directly to a consumer texting 911is for voice and text service providers to meet the same 911 location accuracy requirements.

43. *Interconnected Text Providers*. In seeking comment to establish such a time frame for interconnected text applications to provide coarse location information, we also have a long-term concern for the need to ensure that interconnected text messages to 911 have more accurate location information routed to PSAPs. One of the described server-based solutions, using the location application programming interface (API) in the mobile device rather than a commercial location service, promises the capability to meet the Commission's Phase II location accuracy requirements for handset-based location delivery. While the selection of anyone solution by interconnected text providers should remain technologically neutral, we seek comment on what technological developments need to occur for interconnected text providers to implement a solution that provides Phase II equivalent location information. Further, we find that the record indicates other possible interconnected text-to-911 models that could deliver a more precise location.[84] We request comment on the timeframe in which interconnected text providers could reasonably adopt and implement such approaches. What factors would we need to consider in establishing this timeframe? For example, should different timeframes be established, depending on whether the text provider is an interconnected or an integrated text provider?

44. Also, we seek comment on what technological developments are occurring that would allow interconnected text providers to either access a wireless carrier network for cellular data connectivity or connect to an IP-based network to provide Phase II equivalent location information. Although the CSRIC Working Group's focus is on the capability of using the wireless carrier network, we find that to address consumer concerns to have the ability to seamlessly reach 911, that there should be no distinction between the capabilities of CMRS carriers and interconnected service providers to provide Phase II equivalent location information. We seek comment on this view. Specifically, we request comment on whether there are any technical issues that arise for CMRS carriers and not for interconnected text providers or vice versa.

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[81] Verizon Comments at 7; *see also* T-Mobile Reply Comments at 2 (referring to demands for more precise location as having "negative implications for NG911 deployment.").

[82] *See* CSRIC, "Working Group #1: NG911 Status Update," at 2 (Dec, 4, 2013), *available at* http://transition.fcc.gov/bureaus/pshs/advisory/csric4/CSRIC_IV_WG1_STATUS_120413.pdf (last viewed Jan. 8, 2014).

[83] *See supra* n. 64.

[84] *Cf.* server-based models discussed herein with TCS Ex Parte (filed Dec. 11, 2013).

8. Roaming

45. In the *2012 Further Notice*, the Commission suggested that it is critical for consumers who are roaming to have access to text-to-911 in an emergency.[85] However, the Commission acknowledged that the Carrier-NENA-APCO Agreement does not provide for text-to-911 support for roaming subscribers, and that because "sending and receiving texts while roaming involves two networks, the consumer's home network and the visited roaming network, roaming may create issues for text-to-911 because of the greater technical complexity of routing the message to the correct PSAP based on the consumer's location."[86] The Commission sought specific comment on the mechanics required for home and roaming network operators to identify and communicate the location of a texting consumer to PSAPs, as well as other asserted technical limitations.

46. Carriers including AT&T and Verizon state that a roaming obligation is not technically feasible, and encourage the Commission to allow industry stakeholders to address this issue and defer consideration of any rules at this time.[87] CTIA similarly characterizes the ability of roaming subscribers to send a text to 911 as being "considerabl[y] uncertain" and encourages more study of the issue.[88] CTIA also notes the views of the Emergency Access Advisory Committee (EAAC), which suggests that text-to-911 by a roaming subscriber would require "require significant modifications to the wireless originator network and core infrastructure that will ultimately delay the deployment of SMS-to-9-1-1 services."[89] Sprint and T-Mobile inform that their networks do not currently have the technological capability to support roaming subscriber because "while location information (in the form of cell sector information) is available in the visited network (onto which the subscriber has roamed), it is not normally available to the home CMRS network."[90] Both Sprint and T-Mobile encourage the Commission to "allow for eventual adoption of standards that would contemplate roaming in the NG911 environment."[91] Also, carriers urge the Commission to wait for standards to be adopted to address roaming in the NG-911 environment.[92]

47. On the other hand, public safety entities advocate pushing forward in the face of the technical complexities. BRETSA suggests that if transmitting text messages from a roaming user to a PSAP is not currently achievable, it is better to implement text-to-9-1-1 without roaming capability than to delay text-to-9-1-1 implementation altogether.[93] NENA concedes that the complexity of transmission exists, and it supports mirroring the roaming exclusion contained in the Carrier-NENA-APCO Agreement.[94] However, NENA supports the reevaluation of this exclusion at regular intervals, beginning no later than one year after the Commission's initial text-to-9-1-1 rules come into force.[95]

48. As a general policy matter, we continue to believe that access to 911 via text is just as critical for roaming consumers as it is for consumers utilizing a home carrier's network. Indeed, consumers may not even be aware when they are roaming, and carrier coverage maps may reflect

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[85] *2012 Further Notice* at 15707-8 ¶¶ 124-126.

[86] *Id.* at 15707 ¶124.

[87] AT&T Comments at 20; Verizon Comments at 8.

[88] CTIA Comments at 12.

[89] *Id*. at 13.

[90] Sprint Comments at 13; *see also* T-Mobile Comments at 6.

[91] Sprint Comments at 14; T-Mobile Reply Comments at 3.

[92] *See* Verizon Comments at 8; T-Mobile Reply Comments at 3.

[93] *See* BRETSA Comments at 31.

[94] NENA Comments at 14.

[95] *Id*.

coverage where they may only have roaming agreements.[96] In an emergency, being able to distinguish which carrier is providing a signal should not be the responsibility of the consumer when seconds may matter. Roaming is also particularly critical for customers of small or rural carriers, who rely on roaming when traveling outside the regional footprint of these carriers. We seek comment on this view.

49. At the outset, however, we seek comment on the volume of text-to-911 calls that can reasonably be anticipated when roaming – and reflected in data that carriers might be collecting or consumer surveys by research or industry groups. Telecom RERC asserts that the record indicates a lack of sufficient data on how serious the problem might be. Telecom RERC "suggests that it is necessary for carriers to submit statistics on the number of times users attempted to text 9-1-1 during a roaming situation to the FCC."[97] We invite comment on approaches we could adopt to collect such roaming data.

50. We also seek comment on the costs of requiring roaming text-to-911 calls to be routed to the correct, nearest PSAPs on the roaming carrier's network. For example, Sprint asserts that there would a significant impact on mobile devices were we to adopt a roaming requirement.[98] Sprint further submits that "for the visited network to support roaming the visited network would need to be capable of determining when a text is attempting to reach a local emergency service via 9-1-1, and then this system would need to send the text message to the local text-to-911 gateway, ignoring all normal SMS routing rules. SMS servers would need to be modified to accomplish this. Any responses from the PSAP would also need to somehow be intercepted, so they are not sent back to the home network's Short Message Service Center ('SMSC'), which would require further routing modifications."[99]

51. We further recognize that additional technical issues may require resolution before we would set a date certain for CMRS providers to meet this proposed obligation. Some commenters suggest that CMRS networks cannot currently support roaming and the delivery of location information because while the cell sector information is available in the visited network, it is not available in the home network. For instance, commenters note that the current ATIS standard for text-to-911 over the SMS platform does not support a roaming capability.[100] Further, Sprint adds that mobile "devices . . . would

[96] *See, e.g.*, Verizon Wireless coverage map, *available at* http://www.verizonwireless.com/b2c/support/coverage-locator (last viewed Jan 8, 2014) ("Some of the Coverage Areas include networks run by other carriers…"); AT&T Wireless coverage map, *available at* http://www.att.com/maps/wireless-coverage.html#fbid=MLe8m5Q4HPZ (last viewed Jan. 8, 2014) ("Coverage maps also may include areas served by unaffiliated carriers…); T-Mobile coverage map, *available at* http://www.t-mobile.com/coverage.html (last viewed Jan. 8, 2014) (including coverage from "service partners"); Sprint coverage map, *available at* http://coverage.sprint.com/IMPACT.jsp?ECID=vanity:coverage (last viewed Jan. 8, 2014) (compare with Sprint coverage map without roaming, *available at* http://support.sprint.com/support/article/Know_what_coverage_to_expect_with_older_singleband_phones_or_plans_that_dont_include_roaming/case-gz982789-20110302-115929 (last viewed Jan. 8, 2014)).

[97] Telecom RERC Reply Comments at 14-15.

[98] *See* Sprint Comments at 14.

[99] *Id*. (also submitting that mobile "devices . . . would need to be capable of interacting with multiple SMSCs (both the home and serving SMSCs)" and "[s]torage and delivery of undeliverable SMS messages would also need to be addressed."). In addition, Sprint asserts that "significant changes to SMS would need to be made to handle roaming internationally." *See id*.

[100] *See* T-Mobile Comments at 7 & n.17 (quoting Joint ATIS/TIA Native SMS to 9-1-1 Requirements and Architecture Specification, § 4 (working document) that "[s]upport of SMS-to-9-1-1 for US subscribers roaming between US wireless operator networks is for future study."). *See also* TCS Comments at 15 (referring to ATIS J-STD-110 4.7).

need to be capable of interacting with multiple SMSCs (both the home and serving SMSCs)" and that "[s]torage and delivery of undeliverable SMS messages would also need to be addressed."[101]

52. Given the technological complexities for routing roaming text-to-911 calls, we seek comment on what measures we could take to either facilitate or mandate within a reasonable timeframe a roaming text-to-911 requirement prior to wide-spread implementation of NG911. For example, what standards, if any, would need to be adopted before a requirement would be appropriate? We also seek specific information on what the cost burden would be for carriers to make the necessary changes to their SMS platforms. What timeframe would be required for carriers to make such changes? Would the costs to make CMRS network modifications outweigh the public safety benefit of text-to-911 roaming; and if so, what would the magnitude of those costs be, *e.g.,* compared to the potential call volume for text-to-911? Further, do any of the mobile-based, server-based solutions, or other similar potential solutions described above in this Second Further Notice provide a technically feasible pathway for implementing a roaming text-to-911 requirement either over SMS platforms or, alternatively, IP-based platforms before implementation of NG911 makes text-to-911 roaming more feasible? If so, what standards, if any, would have to be adopted to implement those solutions? What would a reasonable timeframe be to adopt those standards and test such for implementation? Additionally, what further educational measures or coordination can the Commission take to make consumers aware of the limitations in trying to send a text-to-911 message while roaming?[102]

9. Liability Protection

53. In the *2012 Further Notice*, the Commission recognized that adequate liability protection is needed for PSAPs, CMRS providers, interconnected service providers, and vendors to proceed with implementation of text-to-911.[103] The Commission noted that the 2008 New and Emerging Technologies 911 Improvement Act (*NET 911 Act*) expanded the scope of state liability protection by requiring states to provide parity in the degree of protection provided to traditional and non-traditional 911 providers.[104] In the Next Generation 9-1-1 Advancement Act of 2012 (*NG911 Advancement Act*), Congress further extended these parity provisions to providers of NG911 service.[105] The *2012 Further Notice* sought comment on whether providers of text-to-911 service have sufficient liability protection under current law to provide text-to-911 services to their customers.[106] The Commission observed that under the Carrier-NENA-APCO Agreement, the four major wireless carriers have committed to deploy text-to-911 capability without any precondition requiring additional liability protection other than the protection afforded by current law. Nevertheless, the *2012 Further Notice* sought comment on whether the Commission could take additional steps – consistent with our regulatory authority – to provide additional liability protection to text-to-911 service providers.[107]

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[101] Sprint Comments at 14 (also asserting that "significant changes to SMS would need to be made to handle roaming internationally").

[102] The Commission currently requires that "when a consumer is roaming on a covered text provider's host network pursuant to §20.12, the covered text provider operating the consumer's home network shall have the obligation to originate an automatic bounce-back message to such consumer when the consumer is located in an area where text-to-911 service is unavailable, or the home provider does not support text-to-911 service in that area at the time." 47 C.F.R. 20.18(n)(7).

[103] *2012 Further Notice* at ¶ 167. The Commission also sought comment on liability issues in the *2011 Notice*. *See 2011 Notice* at ¶ 120.

[104] *2012 Further Notice* at ¶ 164. *See* 47 U.S.C. § 615a.

[105] Next Generation 9-1-1 Advancement Act of 2012, 47 U.S.C.A. § 1472 (2012) (*NG911 Advancement Act*), Sec. 6506.

[106] *2012 Further Notice* at para. 167.

[107] *Id.*

54. In February 2013, pursuant to the NG911 Advancement Act, Commission staff submitted a report to Congress addressing the legal and regulatory framework for NG911 services.[108] With respect to liability, the NG911 Report recognized that tort liability standards are traditionally a matter of state law, and recommended that Congress consider incentives for states to revise their liability regimes to provide appropriate protections for entities providing or supporting NG911 services.[109] The NG911 Report also suggested that Congress include appropriate liability protection as a part of any federal law that imposes NG911 requirements or solicits voluntary NG911 activity.[110]

55. In response to the *2012 Further Notice*, numerous parties submitted comments on liability issues. We do not address these comments here, but encourage parties to provide any additional or updated information relevant to our consideration of this issue including the possible risks and costs of implementing text-to-911 without liability protections in place. In addition, we seek comment on whether adopting text-to-911 requirements as proposed in this proceeding would assist in mitigating liability concerns by establishing standards of conduct that could be invoked by text-to-911 providers in defense against state tort liability or similar claims.

10. Waivers

56. Should the Commission adopt mandatory obligations to support text-to-911, we seek comment on to what extent, and under what circumstances, the Commission should consider waivers. The Commission has a generally articulated waiver standard under Sections 1.3 and 1.925 of our rules.[111] The Commission has also from time to time provided guidance on how applicants may demonstrate that the waiver standard has been met in a particular circumstance.[112] Under certain statutes, Congress has also directed the Commission to consider waivers in particular circumstances. For example, Section 716(h)(1) of the Communications and Video Accessibility Act (CVAA) allows the Commission to grant waivers of the CVAA's accessibility requirements for features or functions of devices capable of accessing advanced communications services but which are, in the judgment of the Commission, designed primarily for purposes other than accessing advanced communications.[113] The Commission sought comment on how to implement this provision, and subsequently provided guidance on the substantive factors impacting the Commission's waiver analysis.[114]

57. Recognizing that to some extent it may depend on the rule adopted, we seek comment on what factors or other considerations would be relevant to the Commission in evaluating whether a wavier would be appropriate. Given the significance of the public benefits of supporting text-to-911, is a showing of financial difficulty or technical infeasibility in complying sufficient on its own? What amount of financial challenge or information regarding technical difficulties should be demonstrated? If the waiver is related to any mandatory timeframe, what circumstances should be considered? Should

[108] *NG911 Advancement Act* at § 6509; *NG 911 Report*, *supra* n. 5.

[109] *NG911 Report* at 4.1.5.2.

[110] *Id.*

[111] *See, e.g.,* 47 C.F.R. 47 C.F.R. §§ 1.3, 1.925; *see also WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

[112] *See, e.g.*, Wireless Telecommunications Bureau, Public Safety and Homeland Security Bureau, and Office of Engineering and Technology Provide Reminder of January 1, 2013 Deadline for Transition to Narrowband Operations in the 150-174 MHz and 421-512 MHz Bands and Guidance for Submission of Requests for Wavier and Other Matters, DA 11-1189, *Public Notice*, 26 FCC Rcd 9647 (July 13, 2011); Federal Communications Commission Provides Guidance for Submission of Requests for Waiver of June 26, 2008 Deadline for Completion of 800 MHz Rebanding, FCC 08-23, *Public Notice*, 23 FCC Rcd 664 (2008).

[113] 47 U.S.C. § 617(h)(1).

[114] *See* Implementation of Sections 716 and 717 of the Communications Act of 1934, as Enacted by the Twenty-First Century Communications and Video Accessibility Act of 2010, CG Docket No. 10-213, *Report and Order and Further Notice of Proposed Rulemaking,* 26 FCC Rcd 14557, 14633-14642 ¶¶ 179-200 (2011).

additional time be limited in availability? What other factual considerations should the Commission take into account?

11. Treatment of Voluntary Agreements

58. In this rulemaking, we seek comment on a framework for encouraging voluntary industry commitments that will benefit the public interest. The voluntary commitment that AT&T, Sprint, T-Mobile, and Verizon Wireless have entered into with NENA and APCO could serve as a model for further industry action on such issues. We seek comment on how any rules adopted in this proceeding could provide a "safe harbor" option for companies that have entered into voluntary agreements with public safety that the Commission has determined serves the public interest. Under a safe harbor approach, should companies be given the option to either be bound by their voluntary commitments or to be subject to the rules? If companies choosing to abide by their voluntary commitments would be afforded safe harbor treatment, then if such a company was alleged to have violated its voluntary commitment, should it be afforded an opportunity to correct its behavior without fear of enforcement action? Conversely, for companies that elect to be subject to the rules, would they be subject to standard enforcement mechanisms?

59. We also seek comment on what should happen if a company violates its voluntary commitment after being afforded an opportunity to correct. Should failure to abide by the voluntary commitment after opportunity to correct lead to termination of the safe harbor? Should the company be required to switch to the rules track or subject to enforcement action for sustained violations of its commitment? Should certain violations, *e.g.,* willful misconduct, void the safe harbor protections and deprive the company of the opportunity to correct? We seek comment how ensuring accountability under and the enforceability of voluntary commitments under any of these frameworks would impact the incentives for industry to enter into voluntary commitments that are in the public interest.

60. We seek comment on the potential risks as well as benefits of this approach to voluntary commitments. Are there circumstances in which the safe harbor option should not be made available? What should the Commission do if such voluntary agreements go beyond the Commission's rules in a particular area? In this context, do the interests of private parties negotiating voluntary agreements align with the Commission's or the public's interests? Should such an approach be time-limited or subject to re-evaluation based on changed circumstances, *e,g*., where the Commission determines that additional regulatory action on a given issue may be warranted? Should we solicit public comment on such voluntary commitments before granting signatories a safe harbor?

61. We also seek comment on several ancillary issues. We seek comment on the nature of an "election," and whether parties must join a voluntary agreement at its inception, or may join such an agreement at a later time. Would such a situation provide the opportunity for regulatory arbitrage? Another important aspect of voluntary commitments is the ability to measure and monitor industry compliance with such commitments. The Carrier-NENA-APCO Agreement included voluntary quarterly reporting, whereby parties to the commitment provide updated information to the Commission regarding the extent of their compliance with the commitment. We seek comment on whether for future voluntary commitments to qualify for the treatment described above, they must include a robust reporting requirement that provides the Commission with sufficient data to make informed decisions about the effectiveness of the voluntary commitment and, additionally, what the implications of such a voluntary information collection might be for purposes of the Paperwork Reduction Act and any other relevant legal requirements.

12. Future Evolution of Texting Services

62. In the *2012 Further Notice*, the Commission divided text applications into two broad categories: (1) interconnected text applications that use IP-based protocols to deliver text messages to a service provider, which the service provider then delivers the text messages to destinations identified by a telephone number, and (2) non-interconnected applications that only support communication with a defined set of users of compatible applications but do not support general communication with text-

capable telephone numbers.[115] We note that our definition of interconnected text, as codified in the Bounce-Back Order, encompasses applications "that enable a consumer to send text messages to all or substantially all text-capable U.S. telephone numbers and receive text messages from the same."[116] We seek comment whether the definition of interconnected text should also be interpreted to include a service that utilizes IP-based protocols for outgoing text and SMS-based protocols for the return text and request that commenters discuss any potential problems with such an interpretation.

63. As discussed above, our initial proposals remain focused on the subset of "over-the-top" applications that constitute interconnected text applications. The division of text applications into interconnected and non-interconnected remains appropriate given the record in this proceeding. We recognize, however, there are many varieties of text messaging applications, and many more varieties are likely to develop.

64. As these applications continue to grow in popularity, however, we expect that consumer habits will change, and with them, their expectations as to the functionality of these applications may also change. We seek comment on the varieties of messaging applications. Under what conditions would consumers expect that text messaging via an application that is not connected to the PSTN and does not allow direct texting to a phone number would enable a connection to 911? Do consumers expect that text messaging services generally have the ability to connect to text-capable telephone numbers? Do consumer expectations vary based on the nature of a particular application? Could such text messaging applications also create consumer expectations that they can reach emergency services? If so, should we require them to do so? What costs would be associated with doing so? For instance, would imposing text-to-911 requirements on non-interconnected text applications raise the cost of such services that would diminish innovation and investment? Should we extend the bounce-back requirement to such applications? Does the Commission have adequate bases of authority to impose such a mandate on such text providers?

13. Legal Authority

65. The Commission's *2012 Further Notice* sought comment on the FCC's authority to apply both a bounce-back requirement and more comprehensive text-to-911 rules to CMRS providers and other entities that offer interconnected text messaging services, including third-party providers of OTT text messaging applications.[117] The *2012 Further Notice* discussed the scope of the Commission's authority under Title III, the CVAA, and the agency's ancillary authority.[118]

66. Subsequently, in the 2013 *Bounce-Back Order*, the Commission determined that numerous provisions of Title III provide the FCC with direct authority to impose 911 bounce-back requirements on CMRS providers,[119] that the CVAA vests the Commission with direct authority to impose 911 bounce-back requirements on both CMRS providers and other providers of interconnected text messaging applications, including OTT providers,[120] and that the agency has ancillary authority to

[115] *2012 Further Notice* at 15697 ¶ 91.

[116] *Bounce-Back Order* at 7569-70 ¶ 39; 47. C.F.R. § 20.18(n).

[117] *See 2012 Further Notice*, 27 FCC Rcd at 15721-23 ¶¶ 168-172.

[118] *Id.*

[119] *Bounce-Back Order*, 28 FCC Rcd at 7587-92 ¶¶ 89-99. The Commission found that Sections 301, 303, 307, 309, and 316 of the Communications, *see* 47 U.S.C. §§ 301, 303, 307, 309, and 316, taken together or individually, provide the Commission with authority to apply the bounce-back requirement to CMRS providers. *See Bounce-Back Order*, 28 FCC Rcd at 7587-92 ¶¶ 89-99.

[120] *Bounce-Back Order*, 28 FCC Rcd at 7592-7600 ¶¶ 100-127. The Commission reached this conclusion regarding its CVAA authority for two reasons. First, the Commission found that its decision was a proper exercise of the agency's CVAA authority to promulgate one or more of EAAC's recommendations. *See id*. at 7593-98 ¶¶ 106-120.

(continued….)

apply 911 bounce-back requirements to providers of interconnected text messaging services, including OTT providers.[121] The Commission explained, *inter alia*, that imposing 911 bounce back rules on OTT providers was reasonably ancillary to the Commission's Title III mandate regarding the use of spectrum[122] and the Commission's statutory authority to adopt 911 regulations that ensure that consumers can reach emergency services.[123] We invite parties to comment on whether there are any reasons why the Commission's previous determinations regarding the scope of our authority[124] do not apply in the context of the foregoing proposals, including whether the CVAA provides authority to implement regulations mandating text-to-911 on a telecommunications network that is not on an IP-enabled emergency network. Further, we seek comment on whether text-to-911 is "achievable and technically feasible" for interconnected text providers. To the extent the Commission adopts rules that cover relay providers or other recipients of Interstate TRS funding, we believe we have authority to adopt such rules under sections 201(b) and 225 of the Communications Act. We seek comment on the extent of this authority.

IV. PROCEDURAL MATTERS

A. *Ex Parte* Presentations

67. The proceedings initiated by this *Second Further Notice of Proposed Rulemaking* shall be treated as a "permit-but-disclose" proceedings in accordance with the Commission's *ex parte* rules.[125] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must: (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made; and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda, or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

(Continued from previous page)

Second, and alternatively, the FCC found that its decision was a lawful exercise of the agency's CVAA authority to promulgate certain "other regulations." *See id.* at 7598-7600 ¶¶ 121-127 (quoting 47 U.S.C. § 615c(g)).

[121] *Bounce-Back Order*, 28 FCC Rcd at 7600-7605 ¶¶ 128-140.

[122] *Id.* at 7601-7602 ¶¶ 131-132.

[123] *Id.*at 7601-7602 ¶¶ 136-140 (citing New and Emerging Technologies Improvement Act of 2008, P.L. 110-283, 122 Stat. 2620 (2008) ("NET 911 Act"), Wireless Communications and Public Safety Act of 1999, P.L. 106-81, 113 Stat. 1286 (1999) ("911 Act"); Ensuring Needed Help Arrives Near Callers Employing (ENHANCE) 911 Act of 2004, Pub. L. 108-494, §§ 104, 158 (b)(1); 118 Stat. 3987-3988; 47 U.S.C. §§ 901, 942 (2004) ("ENHANCE 911 Act")); *see also Nuvio Corp. v. FCC*, 473 F.3d 301, 310-11 (D.C. Cir. 2007) (Kavanaugh, J., concurring).

[124] *See Bounce-Back Order*, 28 FCC Rcd at 7587-7605 ¶¶ 88-140; *see also, 2012 Further Notice*, 27 FCC Rcd at 15721-23 ¶¶ 168-172.

[125] 47 C.F.R. §§ 1.1200 *et seq.*

B. Comment Filing Procedures

68. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments in response to this *Second Further Notice of Proposed Rulemaking* on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: http://fjallfoss.fcc.gov/ecfs2/.

- Paper Filers: Parties that choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

  Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

  - All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.

  - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.

  - U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

C. Accessible Formats

69. To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

D. Regulatory Flexibility Analysis

70. As required by the Regulatory Flexibility Act of 1980, *see* 5 U.S.C. § 604, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules addressed in this document. The IRFA is set forth in Appendix B. Written public comments are requested in the IRFA. These comments must be filed in accordance with the same filing deadlines as comments filed in response to this *Second Further Notice of Proposed Rulemaking* as set forth on the first page of this document, and have a separate and distinct heading designating them as responses to the IRFA.

E. Paperwork Reduction Analysis

71. The *Second Further Notice of Proposed Rulemaking* contains proposed new information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and OMB to comment on the information collection requirements contained in this document, as required by PRA. In addition, pursuant to the Small Business Paperwork Relief Act of

2002,[126] we seek specific comment on how we might "further reduce the information collection burden for small business concerns with fewer than 25 employees."[127]

F. Congressional Review Act

72. The Commission will send a copy of this *Policy Statement and Second Further Notice of Proposed Rulemaking* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act (CRA), *see* 5 U.S.C. § 801(a)(1)(A).

V. ORDERING CLAUSES

73. Accordingly, IT IS ORDERED, pursuant to Sections 1, 4(i), 201(b), 225, 301, 303(b), 303(r), 307, 309, 316, 319, 324, 332, 333, 615a, 615a-1, and 615b of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 201(b), 225, 301, 303(b), 303(r), 307, 309, 316, 319, 324, 332, 333, 615a, 615a-1, 615b, and 47 U.S.C. § 615c that the *Second Further Notice* in PS Docket No. 11-153 and PS Docket No. 10-255 IS ADOPTED.

74. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Policy Statement and Second Further Notice of Proposed Rulemaking, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

[126] Pub. L. No. 107-198.

[127] 44 U.S.C. § 3506(c)(4).

APPENDIX A

Proposed Rules

Part 20 of the Code of Federal Regulations is proposed to be amended as follows:

PART 20 – COMMERCIAL MOBILE RADIO SERVICES

1. The authority for Part 20 is revised to read as follows:

Authority: 47 U.S.C. §§ 151, 152, 154(i), 157, 160, 201, 214, 222, 251(e), 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332, 333, 615a, 615a-1, and 615b.

2. Section 20.18(n) is amended by adding new paragraphs (9) through (14):

* *

(9) *911 Text Message.* A 911 text message is a message, consisting entirely of text characters, intended to be delivered to a PSAP by a Covered Text Provider.

(10) *911 Short Code.* The 911 Short Code is the designated short code to identify a 911 Text Message to be sent to a designated PSAP.

(11) No later than December 31, 2014, all covered text providers must have the capability to route a 911 text message to a PSAP. In complying with this requirement, covered text providers must route text messages to the same PSAP to which a 911 voice call would be routed, unless the responsible local or state entity designates a different PSAP to receive 911 text messages and informs the carrier of that change.

(a) Covered text providers must begin routing all 911 texts messages to a PSAP making a valid request of the carrier within a reasonable amount of time, not to exceed six months.

(b) PSAPs may begin making valid requests prior to the December 31, 2014, deadline for the capability to route 911 texts to PSAPs but covered text providers are not obligated to begin providing such service until December 31, 2014.

(c) *Valid Request* means that:

(*i*) the requesting PSAP represents that it is technically ready to receive 911 text messages in the format requested; and

(*ii*) the appropriate local or State 911 service governing authority has specifically authorized the PSAP to accept and, by extension, the signatory service provider to provide, text-to-911 service (and such authorization is not subject to dispute).

(12) *Covered Devices and Network Connection.* Third party interconnected text providers that meet the definition of a "covered text provider" must offer the capability described in paragraphs (n)(11) during time periods when the mobile device is connected to a CMRS network.

* * * * *

APPENDIX B

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact of the proposal described in the attached Second Further Notice of Proposed Rulemaking on small entities. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments in the *Second Further Notice of Proposed Rulemaking*. The Commission will send a copy of the *Second Further Notice of Proposed Rulemaking*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *Second Further Notice of Proposed Rulemaking* and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Proposed Rules

2. Wireless consumers are increasingly using text messaging as a means of everyday communication on a variety of platforms. The legacy 911 system, however, does not support text messaging as a means of reaching emergency responders, leading to potential consumer confusion and even to possible danger. As consumer use of carrier-based and third party-provided texting applications expands and evolves, the 911 system must also evolve to enable wireless consumers to reach 911 in those emergency situations where a voice call is not feasible or appropriate.

3. In this *Second Further Notice of Proposed Rulemaking*, we propose rules that set timeframes that will enable Americans to send text messages to 911 (text-to-911) across platforms, and seek comment on consumers' use of text-to-911 while roaming. We also seek comment on the transmission to a PSAP of more specific information as to the location of a texting party. Specifically, we propose to require all wireless carriers and providers of "interconnected" text messaging applications[4] to support the ability of consumers to send text messages to 911 in all areas throughout the nation where 911 Public Safety Answering Points (PSAPs) are also prepared to receive the texts no later than December 31, 2014. We also seek comment on requiring carriers to support text-to-911 when consumers are roaming on their networks, and to provide "Phase II" equivalent location information regarding the location from which a text is sent to 911. We also seek comment on enhancing liability protection for text providers within the Next Generation 911 (NG911) ecosystem, how relay services may support text-to-911, and how we should consider any waiver standards that may apply.

4. Our proposals build on the voluntary commitment by the four largest wireless carriers – in an agreement with the National Emergency Number Association (NENA), and the Association of Public Safety Communications Officials (APCO) (Carrier-NENA-APCO Agreement) -- to make text-to-911 available to their customers by May 15, 2014.[5]. The baseline requirements we propose in this Second

[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *See* 5 U.S.C. § 603(a).

[3] *See* 5 U.S.C. § 603(a).

[4] In this *Second Further Notice of Proposed Rulemaking*, "text messaging" refers to any service that allows a mobile device to send information consisting of text to other mobile devices by using domestic telephone numbers. Examples of text messaging include Short Message Service (SMS), Multimedia Messaging Service (MMS), and two-way "interconnected text" applications. "Interconnected text" applications use IP-based protocols to deliver text messages to a service provider and the service provider then delivers the text messages to destinations identified by a telephone number, using either IP-based or SMS protocols.

[5] *See* Letter from Terry Hall, APCO International; Barbara Jaeger, NENA; Charles W. McKee, Sprint Nextel; Robert W. Quinn, Jr., AT&T; Kathleen O'Brien Ham, T-Mobile USA; and Kathleen Grillo, Verizon, to Julius

(continued….)

Further Notice for interconnected text providers are modeled on the Carrier-NENA-APCO Agreement, and we seek additional comment how all "interconnected text" providers can achieve these milestones in the same or similar timeframes.

5. Seeking comment on establishing timeframes for the addition of text capability to the 911 system for interconnected text providers and for all consumers when roaming on a CMRS network will vastly enhance the system's accessibility for over 40 million Americans with hearing or speech disabilities. It will also provide a vital and lifesaving alternative to the public in situations where 911 voice service is unavailable or placing a voice call could endanger the caller. Indeed, as recent history has shown, text messaging is often the most reliable means of communications during disasters where voice calls cannot be completed due to capacity constraints. Finally, implementing text-to-911 represents a crucial next step in the ongoing transition of the legacy 911 system to a NG911 system that will support not only text but will also enable consumers to send photos, videos, and data to PSAPs, enhancing the information available to first responders for assessing and responding to emergencies.

6. Our proposed approach to text-to-911 is also based on the presumption that consumers in emergency situations should be able to communicate using the text applications they are most familiar with from everyday use. Currently, the most commonly used texting technology is Short Message Service (SMS), which is available, familiar, and widely used by virtually all wireless consumers.[6] In the Carrier-NENA-APCO Agreement, the four major carriers have indicated that they intend to use SMS-based text for their initial text-to-911 deployments,[7] and we expect other initial deployments to be similarly SMS-based.

7. At the same time, have not limited our focus to SMS-based text. As a result of the rapid proliferation of smartphones and other advanced mobile devices, some consumers are beginning to move away from SMS to other IP-based text applications, including downloadable software applications provided by parties other than the underlying carrier.[8] To the extent that consumers gravitate to such applications as their primary means of communicating by text, they may reasonably come to expect these applications to also support text-to-911, as consumer familiarity is vital in emergency situations where seconds matter. Therefore, in this Second Further Notice, we seek to ensure that consumers have access to the same text-to-911 capabilities on the full array of texting applications that they use for ubiquitous on a reasonable timeframe.

B. Legal Basis

8. The legal basis for any action that may be taken pursuant to this Second Further Notice of Proposed Rulemaking is contained in Sections 1, 2, 4(i), 7, 10, 201, 201(b), 214, 222, 225, 251(e), 301, 302, 303, 303(b), 303(r), 307, 307(a), 309, 309(j)(3), 316, 316(a), 332, 615a, 615a-1, 615b, 615c(a), 615c(c), 615c(g), and 615(c)(1) of the Communications Act of 1934, 47 U.S.C. §§ 151, 152(a), 154(i), 157, 160, 201, 201(b), 214, 222, 225, 251(e), 301, 302, 303, 303(b), 303(r), 307, 307(a), 309, 309(j)(3),

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Genachowski, Chairman, Federal Communications Commission, and Commissioners McDowell, Clyburn, Rosenworcel and Pai; PS Docket 11-153, PS Docket No. 10-255 (Dec. 6, 2012) (*Carrier-NENA-APCO Agreement*).

[6] *See* Pew Internet & American Life Project, "Cell Phones and American Adults," (Sept. 2010) at 5, 21, *available at* http://www.afpnet.org/files/ContentDocuments/PEW%20Research_Cell%20Phone%20Use_sep%202010.pdf (last viewed Nov. 13, 2012) (determining that "at least 72% of all U.S. cell phone users have used SMS at least once."). For the 12 month period ending on June 30, 2012, CTIA reports that 2.27 trillion text messages were sent, as well as 5.8 billion MMS messages. *See* http://files.ctia.org/pdf/CTIA_Survey_MY_2012_Graphics-_final.pdf (last viewed Nov. 19, 2012).

[7] *Carrier-NENA-APCO Agreement* at 3.

[8] *See* Chen, Brian, "Apps Redirect Text Messages, and Profits, From Cellular Providers," N.Y. TIMES, Dec. 4, 2012, *available at* http://www.nytimes.com/2012/12/05/technology/free-messaging-apps-siphon-profits-from-cellular-providers.html?nl=todaysheadlines&emc=edit_th_20121205&_r=0 (last viewed Dec. 5, 2012).

316, 316(a), 332, 615a, 615a-1, 615b, 615c, 615c(c), 615c(g), and 615(c)(1).

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Would Apply

9. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules.[9] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[10] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[11] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[12]

10. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions*. Our action may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.[13] First, nationwide, there are a total of approximately 27.9 million small businesses, according to the SBA.[14] In addition, a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[15] Nationwide, as of 2007, there were approximately 1,621,315 small organizations.[16] Finally, the term "small governmental jurisdiction" is defined generally as "governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[17] Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.[18] We estimate that, of this total, as many as 88,506 entities may qualify as "small governmental jurisdictions."[19] Thus, we estimate that most governmental jurisdictions are small.

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[9] 5 U.S.C. §§ 603(b)(3), 604(a)(3).

[10] 5 U.S.C. § 601(6).

[11] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such terms which are appropriate to the activities of the agency and publishes such definitions(s) in the Federal Register."

[12] 15 U.S.C. § 632.

[13] *See* 5 U.S.C. §§ 601(3)–(6).

[14] Figure is from 2010. *See* SBA, Office of Advocacy, available at http://www.sba.gov/sites/default/files/FAQ_Sept_2012.pdf (last viewed Jan. 31, 2014). .

[15] 5 U.S.C. § 601(4).

[16] INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

[17] 5 U.S.C. § 601(5).

[18] U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007).

[19] The 2007 U.S Census data for small governmental organizations are not presented based on the size of the population in each such organization. There were 89, 476 small governmental organizations in 2007. If we assume that county, municipal, township and school district organizations are more likely than larger governmental organizations to have populations of 50,000 or less, the total of these organizations is 52,125. If we make the same assumption about special districts, and also assume that special districts are different from county, municipal, township, and school districts, in 2007 there were 37,381 special districts. Therefore, of the 89,476 small governmental organizations documented in 2007, as many as 89,506 may be considered small under the applicable standard. This data may overestimate the number of such organizations that has a population of 50,000 or less. U.S.

(continued….)

1. Telecommunications Service Entities

a. Wireless Telecommunications Service Providers

11. Pursuant to 47 C.F.R. § 20.18(a), the Commission's 911 service requirements are only applicable to Commercial Mobile Radio Service (CMRS) "[providers], excluding mobile satellite service operators, to the extent that they: (1) Offer real-time, two way switched voice service that is interconnected with the public switched network; and (2) Utilize an in-network switching facility that enables the provider to reuse frequencies and accomplish seamless hand-offs of subscriber calls. These requirements are applicable to entities that offer voice service to consumers by purchasing airtime or capacity at wholesale rates from CMRS licensees."

12. Below, for those services subject to auctions, we note that, as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Also, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated.

13. *Wireless Telecommunications Carriers (except satellite)*. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular phone services, paging services, wireless Internet access, and wireless video services.[20] The appropriate size standard under SBA rules is for the category Wireless Telecommunications Carriers. The size standard for that category is that a business is small if it has 1,500 or fewer employees.[21] For this category, census data for 2007 show that there were 11,163 establishments that operated for the entire year.[22] Of this total, 10,791 establishments had employment of 999 or fewer employees and 372 had employment of 1000 employees or more.[23] Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities that may be affected by rules proposed in the *Second Further Notice*.[24]

14. *Wireless Service Providers*. The SBA has developed a small business size standard for wireless firms within the two broad economic census categories of "Paging" and "Cellular and Other Wireless Telecommunications." Under both categories, the SBA deems a wireless business to be small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 2002 show that there were 807 firms in this category that operated for the entire year. Of this total, 804 firms had employment of 999 or fewer employees, and three firms had employment of 1,000 employees or more.

(Continued from previous page)

CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Tables 427, 426 (Data cited therein are from 2007).

[20] U.S. Census Bureau, North American Industry Classification System, Definition of "Wireless Telecommunications Carriers (except Satellite)," NAICS code 517210, *available at* http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2007%20NAICS%20Search (last viewed Jan. 31, 2013).

[21] *See id*. *See also* 13 C.F.R. § 121.201, NAICS code 517210.

[22] U.S. Census Bureau, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210" (issued Nov. 2010), *available at* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ2&prodType=table (last viewed Jan. 31, 2014).

[23] *Id*. Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "100 employees or more."

[24] *Id.*

Thus, under this category and associated small business size standard, the majority of firms can be considered small. For the census category of Cellular and Other Wireless Telecommunications, Census Bureau data for 2002 show that there were 1,397 firms in this category that operated for the entire year. Of this total, 1,378 firms had employment of 999 or fewer employees, and 19 firms had employment of 1,000 employees or more. Thus, under this second category and size standard, the majority of firms can, again, be considered small.

15. *Incumbent Local Exchange Carriers* (*Incumbent LECs*). Neither the Commission nor the SBA has developed a small business size standard specifically for incumbent local exchange services. The appropriate size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[25] Census Bureau data for 2007, which now supersede data from the 2002 Census, show that there were 3,188 firms in this category that operated for the entire year. Of this total, 3,144 had employment of 999 or fewer, and 44 firms had had employment of 1000 or more. According to Commission data, 1,307 carriers reported that they were incumbent local exchange service providers.[26] Of these 1,307 carriers, an estimated 1,006 have 1,500 or fewer employees and 301 have more than 1,500 employees.[27] Consequently, the Commission estimates that most providers of local exchange service are small entities that may be affected by the rules and policies proposed in the Second Further Notice. Thus under this category and the associated small business size standard, the majority of these incumbent local exchange service providers can be considered small.[28]

16. A *Competitive Local Exchange Carriers (Competitive LECs), Competitive Access Providers (CAPs), Shared-Tenant Service Providers, and Other Local Service Providers.* Neither the Commission nor the SBA has developed a small business size standard specifically for these service providers. The appropriate size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[29] Census Bureau data for 2007, which now supersede data from the 2002 Census, show that there were 3,188 firms in this category that operated for the entire year. Of this total, 3,144 had employment of 999 or fewer, and 44 firms had had employment of 1,000 employees or more. Thus under this category and the associated small business size standard, the majority of these Competitive LECs, CAPs, Shared-Tenant Service Providers, and Other Local Service Providers can be considered small entities.[30] According to Commission data, 1,442 carriers reported that they were engaged in the provision of either competitive local exchange services or competitive access provider services.[31] Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees and 186 have more than 1,500 employees.[32] In addition, 17 carriers have reported that they are Shared-Tenant Service Providers, and all 17 are estimated to have 1,500 or fewer employees.[33] In addition, 72 carriers have reported that they are Other Local Service Providers.[34]

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[25] 13 C.F.R. § 121.201, NAICS code 517110.

[26] *See Trends in Telephone Service*, Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division at Table 5.3 (Sept. 2010) (*Trends in Telephone Service*).

[27] *See id*.

[28] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-_skip=600&-ds_name=EC0751SSSZ5&-_lang=en.

[29] 13 C.F.R. § 121.201, NAICS code 517110.

[30] *See* http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-_skip=600&-ds_name=EC0751SSSZ5&-_lang=en.

[31] *See Trends in Telephone Service* at Table 5.3.

[32] *See id.*

[33] *See id*.

[34] *See id*.

Of the 72, seventy have 1,500 or fewer employees and two have more than 1,500 employees.[35] Consequently, the Commission estimates that most providers of competitive local exchange service, competitive access providers, Shared-Tenant Service Providers, and Other Local Service Providers are small entities that may be affected by rules proposed in the *Second Further Notice*.

17. *Broadband Personal Communications Service*. The broadband personal communications services (PCS) spectrum is divided into six frequency blocks designated A through F, and the Commission has held auctions for each block. The Commission initially defined a "small business" for C- and F-Block licenses as an entity that has average gross revenues of $40 million or less in the three previous calendar years.[36] For F-Block licenses, an additional small business size standard for "very small business" was added and is defined as an entity that, together with its affiliates, has average gross revenues of not more than $15 million for the preceding three calendar years.[37] These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.[38] No small businesses within the SBA-approved small business size standards bid successfully for licenses in Blocks A and B. There were 90 winning bidders that claimed small business status in the first two C-Block auctions. A total of 93 bidders that claimed small business status won approximately 40 percent of the 1,479 licenses in the first auction for the D, E, and F Blocks.[39] On April 15, 1999, the Commission completed the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.[40] Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

18. On January 26, 2001, the Commission completed the auction of 422 C and F Block Broadband PCS licenses in Auction No. 35. Of the 35 winning bidders in that auction, 29 claimed small business status.[41] Subsequent events concerning Auction 35, including judicial and agency determinations, resulted in a total of 163 C and F Block licenses being available for grant. On February 15, 2005, the Commission completed an auction of 242 C-, D-, E-, and F-Block licenses in Auction No. 58. Of the 24 winning bidders in that auction, 16 claimed small business status and won 156 licenses.[42] On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.43 Of the 12 winning bidders in that auction, five claimed small business status and won

[35] *See id*.

[36] *See* Amendment of Parts 20 and 24 of the Commission's Rules – Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap; Amendment of the Commission's Cellular/PCS Cross-Ownership Rule; WT Docket No. 96-59, GN Docket No. 90-314, *Report and Order*, 11 FCC Rcd 7824, 7850–52, paras. 57–60 (1996) (*PCS Report and Order*); *see also* 47 C.F.R. § 24.720(b).

[37] *See PCS Report and Order*, 11 FCC Rcd at 7852 ¶ 60.

[38] *See* Letter from Aida Alvarez, Administrator, Small Business Administration, to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, Federal Communications Commission (Dec. 2, 1998) (*Alvarez Letter 1998*).

[39] *See* "Broadband PCS, D, E and F Block Auction Closes," *Public Notice*, Doc. No. 89838 (rel. Jan. 14, 1997).

[40] *See* 'C, D, E, and F Block Broadband PCS Auction Closes," *Public Notice*, 14 FCC Rcd 6688 (WTB 1999). Before Auction No. 22, the Commission established a very small standard for the C Block to match the standard used for F Block. Amendment of the Commission's Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees, WT Docket No. 97-82, *Fourth Report and Order*, 13 FCC Rcd 15743, 15768, ¶ 46 (1998).

[41] *See* "C and F Block Broadband PCS Auction Closes; Winning Bidders Announced," *Public Notice*, 16 FCC Rcd 2339 (WTB 2001).

[42] *See* "Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58," *Public Notice*, 20 FCC Rcd 3703 (WTB 2005).

[43] *See* "Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71," *Public Notice*, 22 FCC Rcd 9247 (WTB 2007).

18 licenses.44 On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78.[45] Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.[46]

19. *Narrowband Personal Communications Services*. To date, two auctions of narrowband personal communications services (PCS) licenses have been conducted. For purposes of the two auctions that have already been held, "small businesses" were entities with average gross revenues for the prior three calendar years of $40 million or less. Through these auctions, the Commission has awarded a total of 41 licenses, out of which 11 were obtained by small businesses. To ensure meaningful participation of small business entities in future auctions, the Commission has adopted a two-tiered small business size standard in the Narrowband PCS Second Report and Order.[47] A "small business" is an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $40 million. A "very small business" is an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than $15 million. The SBA has approved these small business size standards.[48]

20. *Specialized Mobile Radio*. The Commission adopted small business size standards for the purpose of determining eligibility for bidding credits in auctions of Specialized Mobile Radio (SMR) geographic area licenses in the 800 MHz and 900 MHz bands. The Commission defined a "small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $15 million for the preceding three years.[49] The Commission defined a "very small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $3 million for the preceding three years.[50] The SBA has approved these small business size standards for both the 800 MHz and 900 MHz SMR Service.[51] The first 900 MHz SMR auction was completed in 1996. Sixty bidders claiming that they qualified as small businesses under the $15 million size standard won 263 licenses in the 900 MHz SMR band. In 2004, the Commission held a second auction of 900 MHz SMR licenses and three winning bidders identifying themselves as very small businesses won 7 licenses.[52] The auction of 800 MHz SMR licenses for the upper 200 channels was conducted in 1997. Ten bidders claiming that they qualified as small or very small businesses under the $15 million size standard won 38 licenses for the upper 200 channels.[53] A second auction of 800 MHz SMR licenses was conducted in 2002 and included 23 BEA licenses. One bidder claiming small business status won five licenses.[54]

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[44] *Id*.

[45] *See* "Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78," *Public Notice*, 23 FCC Rcd 12749 (WTB 2008).

[46] *Id.*

[47] Amendment of the Commission's Rules to Establish New Personal Communications Services, Narrowband PCS, GEN Docket No. 90-314, ET Docket No. 92-100, PP Docket No. 93-253, *Second Report and Order and Second Further Notice of Proposed Rulemaking*, 15 FCC Rcd 10456 (2000).

[48] *See Alvarez Letter 1998*.

[49] 47 C.F.R. §§ 90.810, 90.814(b), 90.912.

[50] *Id*.

[51] *See Alvarez Letter 1999*.

[52] *See* 900 MHz Specialized Mobile Radio Service Spectrum Auction Closes: Winning Bidders Announced," *Public Notice*, 19 FCC Rcd. 3921 (WTB 2004).

[53] *See* "Correction to Public Notice DA 96-586 'FCC Announces Winning Bidders in the Auction of 1020 Licenses to Provide 900 MHz SMR in Major Trading Areas,'" Public Notice, 18 FCC Rcd 18367 (WTB 1996).

54 *See* "Multi-Radio Service Auction Closes," Public Notice, 17 FCC Rcd 1446 (WTB 2002).

21. The auction of the 1,053 800 MHz SMR licenses for the General Category channels was conducted in 2000. Eleven bidders who won 108 licenses for the General Category channels in the 800 MHz SMR band qualified as small or very small businesses.[55] In an auction completed in 2000, a total of 2,800 Economic Area licenses in the lower 80 channels of the 800 MHz SMR service were awarded.[56] Of the 22 winning bidders, 19 claimed small or very small business status and won 129 licenses. Thus, combining all four auctions, 41 winning bidders for geographic licenses in the 800 MHz SMR band claimed to be small businesses.

22. In addition, there are numerous incumbent site-by-site SMR licensees and licensees with extended implementation authorizations in the 800 and 900 MHz bands. We do not know how many firms provide 800 MHz or 900 MHz geographic area SMR pursuant to extended implementation authorizations, nor how many of these providers have annual revenues not exceeding $15 million. One firm has over $15 million in revenues. In addition, we do not know how many of these firms have 1500 or fewer employees.[57] We assume, for purposes of this analysis, that all of the remaining existing extended implementation authorizations are held by small entities, as that small business size standard is approved by the SBA.

23. *AWS Services (1710–1755 MHz and 2110–2155 MHz bands (AWS-1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS-2); 2155–2175 MHz band (AWS-3))*. For the AWS-1 bands, the Commission has defined a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding $40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding $15 million.[58] In 2006, the Commission conducted its first auction of AWS-1 licenses.[59] In that initial AWS-1 auction, 31 winning bidders identified themselves as very small businesses.[60] Twenty-six of the winning bidders identified themselves as small businesses.[61] In a subsequent 2008 auction, the Commission offered 35 AWS-1 licenses.[62] Four winning bidders identified themselves as very small businesses, and three of the winning bidders identified themselves as a small business.[63] For AWS-2 and AWS-3, although we do not know for certain which entities are likely to apply for these frequencies, we note that the AWS-1 bands are comparable to those used for cellular service and personal communications service. The Commission has not yet adopted size standards for the AWS-2 or AWS-3

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55 *See* "800 MHz Specialized Mobile Radio (SMR) Service General Category (851-854 MHz) and Upper Band (861-865 MHz) Auction Closes; Winning Bidders Announced," *Public Notice*, 15 FCC Rcd 17162 (2000).

56 *See* "800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced," *Public Notice*, 16 FCC Rcd 1736 (2000).

57 *See generally* 13 C.F.R. § 121.201, NAICS code 517210.

58 *See* Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, *Report and Order*, 18 FCC Rcd 25162, App. B (2003), *modified by* Service Rules for Advanced Wireless Services In the 1.7 GHz and 2.1 GHz Bands, *Order on Reconsideration*, 20 FCC Rcd 14058, App. C (2005).

59 *See* Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction No. 66, AU Docket No. 06-30, *Public Notice*, 21 FCC Rcd 4562 (2006) (*Auction 66 Procedures Public Notice*).

60 *See* "Auction of Advanced Wireless Services Licenses Closes; Winning Bidders Announced for Auction No. 66," *Public Notice*, 21 FCC Rcd 10,521 (2006) (*Auction 66 Closing Public Notice*).

61 *See id.*

62 *See AWS-1 and Broadband PCS Procedures Public Notice*, 23 FCC Rcd at 7499. Auction 78 also included an auction of broadband PCS licenses.

63 *See* Auction of AWS-1 and Broadband PCS Licenses Closes, Winning Bidders Announced for Auction 78, Down Payments Due September 9, 2008, FCC Forms 601 and 602 Due September 9, 2008, Final Payments Due September 23, 2008, Ten-Day Petition to Deny Period, *Public Notice*, 23 FCC Rcd 12749 (2008).

bands but has proposed to treat both AWS-2 and AWS-3 similarly to broadband PCS service and AWS-1 service due to the comparable capital requirements and other factors, such as issues involved in relocating incumbents and developing markets, technologies, and services.[64]

24. *Wireless Communications Services.* This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses in the 2305-2320 MHz and 2345-2360 MHz bands. The Commission defined "small business" for the wireless communications services (WCS) auction as an entity with average gross revenues of $40 million for each of the three preceding years, and a "very small business" as an entity with average gross revenues of $15 million for each of the three preceding years.[65] The SBA has approved these definitions.[66] The Commission auctioned geographic area licenses in the WCS service. In the auction, which commenced on April 15, 1997 and closed on April 25, 1997, there were seven bidders that won 31 licenses that qualified as very small business entities, and one bidder that won one license that qualified as a small business entity.*700 MHz Guard Band Licenses.* In the *700 MHz Guard Band Order*, the Commission adopted size standards for "small businesses" and "very small businesses" for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.[67] A small business in this service is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years.[68] Additionally, a "very small business" is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years.[69] SBA approval of these definitions is not required.[70] In 2000, the Commission conducted an auction of 52 Major Economic Area ("MEA") licenses.[71] Of the 104 licenses auctioned, 96 licenses were sold to nine bidders. Five of these bidders were small businesses that won a total of 26 licenses. A second auction of 700 MHz Guard Band licenses commenced and closed in

[64] Service Rules for Advanced Wireless Services in the 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz Bands *et al.*, *Notice of Proposed Rulemaking*, 19 FCC Rcd 19263, App. B (2005); Service Rules for Advanced Wireless Services in the 2155–2175 MHz Band, *Notice of Proposed Rulemaking*, 22 FCC Rcd 17035, App. (2007); Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, *Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9859, App. B (2008).

[65] Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS), *Report and Order*, 12 FCC Rcd 10785, 10879 ¶ 194 (1997).

[66] *See Alvarez Letter 1998*.

[67] Service Rules for the 746-764 MHz Bands, and Revisions to Part 27 of the Commission's Rules, *Second Report and Order*, 15 FCC Rcd 5299 (2000). Service rules were amended in 2007, but no changes were made to small business size categories. *See* Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones, WT Docket No. 01-309, Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services, WT Docket 03-264, Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules, WT Docket No. 06-169, Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229, Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010, WT Docket No. 96-86, *Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd 8064 (2007).

[68] *Id*. at 5343 ¶ 108.

[69] *Id*.

[70] *Id*. at 5343 ¶ 108 n.246 (for the 746-764 MHz and 776-704 MHz bands, the Commission is exempt from 15 U.S.C. § 632, which requires Federal agencies to obtain Small Business Administration approval before adopting small business size standards).

[71] *See* 700 MHz Guard Bands Auction Closes: Winning Bidders Announced, *Public Notice*, 15 FCC Rcd 18026 (WTB 2000).

2001. All eight of the licenses auctioned were sold to three bidders. One of these bidders was a small business that won a total of two licenses.[72]

25. *Upper 700 MHz Band Licenses*. In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses.[73] On January 24, 2008, the Commission commenced Auction 73 in which several licenses in the Upper 700 MHz band were available for licensing: 12 Regional Economic Area Grouping licenses in the C Block, and one nationwide license in the D Block.[74] The auction concluded on March 18, 2008, with 3 winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed $15 million for the preceding three years) and winning five licenses.

26. *Lower 700 MHz Band Licenses*. The Commission previously adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits.[75] The Commission defined a "small business" as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding $40 million for the preceding three years.[76] A "very small business" is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the preceding three years.[77] Additionally, the lower 700 MHz Service had a third category of small business status for Metropolitan/Rural Service Area (MSA/RSA) licenses—"entrepreneur"—which is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $3 million for the preceding three years.[78] The SBA approved these small size standards.[79] An auction of 740 licenses (one license in each of the 734 MSAs/RSAs and one license in each of the six Economic Area Groupings (EAGs)) was conducted in 2002. Of the 740 licenses available for auction, 484 licenses were won by 102 winning bidders. Seventy-two of the winning bidders claimed small business, very small business or entrepreneur status and won licenses.[80] A second auction commenced on May 28, 2003, closed on June 13, 2003, and included 256 licenses.[81] Seventeen winning bidders claimed small or very small business status, and nine winning bidders claimed entrepreneur status.[82] In 2005, the Commission completed an auction of 5 licenses in the Lower 700 MHz band. All three winning bidders claimed small business status.

27. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.[83] An auction of A, B and E block 700 MHz licenses was held in 2008.[84]

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[72] *See* 700 MHz Guard Bands Auction Closes: Winning Bidders Announced, *Public Notice*, 16 FCC Rcd 4590 (WTB 2001).

[73] *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

[74] *See* Auction of 700 MHz Band Licenses Closes, *Public Notice*, 23 FCC Rcd 4572 (WTB 2008).

[75] *See* Reallocation and Service Rules for the 698–746 MHz Spectrum Band (Television Channels 52–59), *Report and Order*, 17 FCC Rcd 1022 (2002) (*Channels 52–59 Report and Order*).

[76] *See id.*, 17 FCC Rcd at 1087–88 ¶ 172.

[77] *See id*.

[78] *See id.*, 17 FCC Rcd at 1088 ¶ 173.

[79] *See Alvarez Letter 1998*.

[80] *See* Lower 700 MHz Band Auction Closes, *Public Notice*, 17 FCC Rcd 17272 (2002).

[81] *See* Lower 700 MHz Band Auction Closes, *Public Notice*, 18 FCC Rcd 11873 (2003).

[82] *See id.*

[83] 700 MHz Second Report and Order, *Second Report and Order*, 22 FCC Rcd 15,289, 15,359 n.434 (2007).

[84] *See* Auction of 700 MHz Band Licenses Closes, *Public Notice*, 23 FCC Rcd 4572 (2008).

Twenty winning bidders claimed small business status (those with attributable average annual gross revenues that exceed $15 million and do not exceed $40 million for the preceding three years). Thirty three winning bidders claimed very small business status (those with attributable average annual gross revenues that do not exceed $15 million for the preceding three years).

28. *Wireless Telephony*. Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. As noted, the SBA has developed a small business size standard for Wireless Telecommunications Carriers (except Satellite).[85] Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.[86] According to *Trends in Telephone Service* data, 413 carriers reported that they were engaged in wireless telephony.[87] Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.[88] Therefore, more than half of these entities can be considered small.

29. *Satellite Telecommunications Providers.* Two economic census categories address the satellite industry. The first category has a small business size standard of $15 million or less in average annual receipts, under SBA rules.[89] The second has a size standard of $25 million or less in annual receipts.[90]

30. The category of Satellite Telecommunications "comprises establishments primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[91] Census Bureau data for 2007 show that 607 Satellite Telecommunications firms that operated for that entire year.[92] Of this total, 533 firms had annual receipts of under $10 million, and 74 firms had receipts of $10 million to $24,999,999.[93] Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by rules proposed in the *Second Further Notice*.

31. The second category, *i.e.* "All Other Telecommunications", comprises "establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or Voice over Internet Protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry."[94] For this category, Census Bureau data for 2007 show that there were a total of 2,623

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[85] 13 C.F.R. § 121.201, NAICS code 517210.

[86] *Id*.

[87] TRENDS IN TELEPHONE SERVICE, tbl. 5.3.

[88] *Id.*

[89] 13 C.F.R. § 121.201, NAICS code 517410.

[90] 13 C.F.R. § 121.201, NAICS code 517919.

[91] U.S. Census Bureau, 2007 NAICS Definitions, "517410 Satellite Telecommunications."

[92] *See* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table (last viewed Jan. 31, 2014).

[93] *See* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table (last viewed Jan. 31, 2014).

[94] *See http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search.*(last viewed Jan. 31, 2014).

firms that operated for the entire year.[95] Consequently, the Commission estimates that the majority of All Other Telecommunications firms are small entities that might be affected by rules proposed in the *Second Further Notice*.

b. Equipment Manufacturers

32. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing.* The Census Bureau defines this category as follows: "This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment." The SBA has developed a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing which is: all such firms having 750 or fewer employees. According to Census Bureau data for 2007, there were a total of 939 establishments in this category that operated for part or all of the entire year. Of this total, 784 had less than 500 employees and 155 had more than 100 employees.[96] Thus, under this size standard, the majority of firms can be considered small.

33. *Semiconductor and Related Device Manufacturing.* These establishments manufacture "computer storage devices that allow the storage and retrieval of data from a phase change, magnetic, optical, or magnetic/optical media. The SBA has developed a small business size standard for this category of manufacturing; that size standard is 500 or fewer employees storage and retrieval of data from a phase change, magnetic, optical, or magnetic/optical media."[97] According to data from the 2007 U.S. Census, in 2007, there were 954 establishments engaged in this business. Of these, 545 had from 1 to 19 employees; 219 had from 20 to 99 employees; and 190 had 100 or more employees.[98] Based on this data, the Commission concludes that the majority of the businesses engaged in this industry are small.

c. Information Service and Software Providers

34. *Software Publishers.* Since 2007 these services have been defined within the broad economic census category of Custom Computer Programming Services; that category is defined as establishments primarily engaged in writing, modifying, testing, and supporting software to meet the needs of a particular customer.[99] The SBA has developed a small business size standard for this category, which is annual gross receipts of $25 million or less.[100] According to data from the 2007 U.S. Census, there were 41,571 establishments engaged in this business in 2007. Of these, 40,149 had annual gross receipts of less than $10,000,000. Another 1,422 establishments had gross receipts of $10,000,000 or

[95] *See* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table (last viewed Jan. 31, 2014).

[96] The NAICS Code for this service 334220. *See* 13 C.F.R 121/201. *See also* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_00A1&prodType=table (last viewed Jan. 31, 2014).

[97] U.S. Census Bureau, 2007 Economic Census, Industry Series: Manufacturing, "Semiconductor and Related Device Manufacturing," NAICS code 334413.

[98] *See* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_31I1&prodType=table (last viewed Jan. 31, 2014).

[99] http://www.census.gov/cgi-bin/sssd/naics/naicsrch (last viewed Jan 31, 2014).

[100] 13 C.F.R. Section 121.201.

more.[101] Based on this data, the Commission concludes that the majority of the businesses engaged in this industry are small.

35. *Internet Service Providers*. Since 2007, these services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."[102] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees.[103] According to Census Bureau data for 2007, there were 3,188 firms in this category, total, that operated for the entire year.[104] Of this total, 3,144 firms had employment of 999 or fewer employees, and 44 firms had employment of 1000 employees or more.[105] Thus, under this size standard, the majority of firms can be considered small. In addition, according to Census Bureau data for 2007, there were a total of 396 firms in the category Internet Service Providers (broadband) that operated for the entire year.[106] Of this total, 394 firms had employment of 999 or fewer employees, and two firms had employment of 1000 employees or more.[107] Consequently, we estimate that the majority of these firms are small entities that may be affected by rules adopted pursuant to the *Report and Order*.

36. *Internet Publishing and Broadcasting and Web Search Portals*. The Commission's action may pertain to interconnected Voice over Internet Protocol (VoIP) services, which could be provided by entities that provide other services such as email, online gaming, web browsing, video conferencing, instant messaging, and other, similar IP-enabled services. The Commission has not adopted a size standard for entities that create or provide these types of services or applications. However, the Census Bureau has identified firms that "primarily engaged in (1) publishing and/or broadcasting content on the Internet exclusively or (2) operating Web sites that use a search engine to generate and maintain extensive databases of Internet addresses and content in an easily searchable format (and known as Web search).

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

37. The *Second Further Notice* proposes that carriers and interconnected text providers that enter into voluntary agreements to provide text-to-911 should be required to submit reports to the Commission on their adherence to their commitments in order to qualify for a safe harbor with respect to any adopted rules. The Commission proposes that any reporting should be robust enough to provide the Commission with data sufficient for it to make informed decisions about the effectiveness of the voluntary commitment. Small entities opting for this path would do so voluntarily, and assume any costs

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[101] http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=511210&search=2007%20NAICS%20Search (last viewed Jan. 31, 2014).

[102] U.S. Census Bureau, 2007 NAICS Definitions, "517110 Wired Telecommunications Carriers" (partial definition), available at http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517110&search=2007%20NAICS%20Search (last viewed Jan. 31, 2014).

[103] 13 C.F.R. § 121.201, NAICS code 517110.

[104] U.S. Census Bureau, 2007 Economic Census, Information: Subject Series – Estab and Firm Size: Table 5, "Employment Size of Firms for the United States: 2007, NAICS Code 517110" (issued Nov. 2010).

[105] *See id*.

[106] U.S. Census Bureau, 2007 Economic Census, Information: Subject Series – Estab and Firm Size: Table 5, "Employment Size of Firms for the United States: 2007, NAICS Code 5171103" (issued Nov. 2010).

[107] *See id*.

associated with such option. Alternatively, they may opt to comply with mandatory rules which may be adopted, and which do not include a proposal for reporting.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

38. The RFA requires an agency to describe any significant, specifically small business alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) and exemption from coverage of the rule, or any part thereof, for small entities."[108]

39. The *Second Further Notice* analyzes a variety of possible means of implementing text-to-911 for interconnected text providers in a timely fashion and costs thereof, and seeks comment on these issues. We are also seeking comment on what waiver standards may apply, and circumstances that may warrant a waiver of any rules we may adopt, including how financial constraints should be considered. Our proposals build on the recently filed voluntary commitment by the four largest wireless carriers – in an agreement with the National Emergency Number Association (NENA), and the Association of Public Safety Communications Officials (APCO) (Carrier-NENA-APCO Agreement) to make text-to-911 available to their customers by May 15, 2014, and the previously submitted record suggesting that all CMRS providers can support text-to-911 by December 31, 2014.[109]

40. Additionally, the *Second Further Notice* seeks comment implementing text-to-911 for roaming consumers, enhancing location accuracy for consumers sending texts to 911, and the evolution of texting applications and how consumers use them.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

41. None.

[108] 5 U.S.C. §§ 603(c)(1)-(c)(4).

[109] *See* Letter from Terry Hall, APCO International, Barbara Jaeger, NENA, Charles W. McKee, Sprint Nextel, Robert W. Quinn, Jr., AT&T, Kathleen O'Brien Ham, T-Mobile USA, and Kathleen Grillo, Verizon, to Julius Genachowski, Chairman, Federal Communications Commission, and Commissioners McDowell, Clyburn, Rosenworcel and Pai; PS Docket 11-153, PS Docket No. 10-255, on Dec. 6, 2012. (*Carrier-NENA-APCO Agreement*).

STATEMENT OF
CHAIRMAN THOMAS E. WHEELER

Re: *Facilitating the Deployment of Text-to-911 and Other Next Generation Applications*, PS Docket No. 11-153; *Framework for Next Generation 911 Deployment*, PS Docket 10-255.

Promoting public safety is one of the fundamental missions of the FCC, part of the Network Compact that I often talk about. And 911 is a cornerstone of our public safety communications infrastructure.

In times of emergency, consumers expect to be able to reach 911 emergency services using whatever means of communications that are most familiar to them. Increasingly, that means text messaging. As a nation, we send and receive almost 6 billion text messages a day.

In certain circumstances, such as domestic violence or kidnapping situations, or when faced with network congestion, texting 911 may be the only practical way to get help. In almost all circumstances for people who are deaf or hard-of-hearing, texting is the primary means for reaching out for emergency assistance.

Today, 91% of American adults own a cell phone, and 81% of cell phone owners use their phones to send or receive text messages. And survey data suggests that over 85% of people with disabilities also use text to communicate. But, as hard as it may be to believe in 2014, most Americans still can't text 911 and receive help.

Thanks in large part to the work of the people in this building, that's changing.

A 2012 Further Notice of Proposed Rulemaking asked a number of questions about potential rules, and a unanimously-adopted Order last year established a "bounce back" requirement to let consumers know when their texts to 911 are not received.

Spurred by the Commission's work, in late 2012, the nation's four largest wireless carriers stepped up and committed to implementing text-to-911 by 2014. These providers worked with the public safety community to develop a voluntary agreement under which they agreed to have text-to-911 available throughout the coverage areas by May 2014. I have repeatedly advocated the "see-saw" rule – that when companies act consistent with the public interest, regulation can be low. Today's Further Notice proposes a framework for how such a voluntary agreement would fit within our rules in the spirit of keeping regulation low for parties who act responsibly. The leadership shown by AT&T, Sprint, T-Mobile, and Verizon Wireless should be encouraged, and the framework we propose does just that.

Unfortunately, there are many in the texting space who have not followed the example set by the four nationwide carriers. In particular, interconnected over-the-top messaging apps are among the most popular messaging apps that people use today. But instead of stepping up and responding to efforts by the FCC and the public safety community, these providers have affirmatively chosen not to engage. This is disappointing, and the failure to take action implicates the other side of the regulatory see-saw: when the public interest is not being served, the Commission will not be afraid to act.

If industry and the 911 community can craft consensus-based solutions that address these issues, the FCC need only ensure regulatory clarity and uniform application to all providers.

And today, we are adopting a policy statement that establishes the Commission's policy that all text providers – both CMRS and interconnected over-the-top providers – should support text-to-911, and a Further Notice that proposes that this be accomplished by the end of 2014.

However, if all stakeholders are unable or unwilling to craft consensus-based solutions, the Commission is prepared to take further action to achieve the goal of comprehensive text-to-911 implementation by the end of the year.

One additional note.

Making text-to-911 a reality by the end of 2014 is not solely dependent on the actions of text service providers. It will require action on the part of 911 call centers, which are commonly called PSAPs, or public safety answering points.

The unfortunate truth is that, on the whole, PSAPs are not where they should be and need to be on text-to-911. It's been more than a year since the FCC secured a commitment from wireless carriers serving 90 percent of Americans to deploy text-to-911 by 2014. Yet today, only a small fraction of PSAPs are ready to support text-to-911. We've done our part. Now, the PSAPs must do theirs.

STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN

Re: *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications,* PS Docket No. 11-153*; Framework for Next Generation 911 Deployment,* PS Docket No. 10-255

One of the most necessary, challenging, yet rewarding aspects of this job is the ability to negotiate and deliver some incredible opportunities for the people we serve through policymaking. One thing not on the table for debate, however, is ensuing that our public safety policies keep pace with the evolving demand for mobile communications services so that all Americans may benefit from the advantages new technologies have to offer. Just a short while ago, we were talking about how SMS texting is becoming more popular than voice calls. Now, industry analysts debate whether over-the-top texting, which allows users to send free messages to those using the same apps, will eclipse basic SMS texting in popularity. Little known tech history fact: In mid-2013, the six most popular over the top text applications, averaged nearly 19 billion messages per day.

For the millions of Americans who live with hearing and speech challenges, SMS and over-the-top texting services are invaluable. They also help in situations when a voice call to 9-1-1 might be dangerous (such as during a home invasion), or when voice calls are being blocked due to unusual network congestion. For these reasons, it is important that we continue to promote greater deployment and adoption of text to 9-1-1 services.

Today's item builds upon the voluntary commitments made by four nationwide wireless carriers and I wish to thank them once again, along with APCO and NENA, for their efforts to promote timely deployments of text to 9-1-1 services to PSAPs.

To ensure these public safety services are available to all wireless consumers we acknowledge that there is still more work to do. So I am pleased this item seeks comment on a number of important aspects that will be part of the long term evolution of text to 9-1-1 services. These elements include: (1) providing more precise location information in conjunction with emergency texts, (2) delivering text-to-911 over non-cellular data channels, (3) and supporting text-to-911 for consumers while roaming on CMRS networks.

Admiral David Simpson and his staff in the Public Safety and Homeland Security Bureau are to be commended, for their great work on this item.

STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL

Re: *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications,* PS Docket No. 11-153*; Framework for Next Generation 911 Deployment,* PS Docket 10-255.

The first telephone number I taught my children was 911. It is a number that every one of us knows by heart but every one of us hopes that we will never use. As the old saying goes, you may only call 911 once in your life, but it will be the most important call you ever make.

The challenge to the continued success of 911 is the increasing complexity of our communications systems. Every new way of reaching out creates new possibilities but also new difficulties. Still, over time we have made steady progress bringing new technology into the 911 framework. We expanded 911 service to mobile phones, facilitated development of handset and network solutions for location technology, and made 911 an essential feature of interconnected VoIP. Just last month, in one of Chairman Wheeler's first acts, the Commission took important steps to make our 911 infrastructure more reliable when disaster strikes. This is good stuff.

Today we build on these earlier efforts to make 911 service more accessible. We adopt a policy statement calling on wireless carriers to support text-to-911 capabilities. We also tee up questions about roaming, cost, and promoting adoption in a related rulemaking. I know texting-to-911 can save lives. That is because I have seen it in action in 911 call centers in Vermont and Maryland. I also know that this service could be a game changer for those who are deaf, hard of hearing, or have speech difficulties. So both the policy statement and rulemaking have my full support.

But with as much as we have already accomplished, more work lies ahead. That is because there are some stubborn gaps in our policies that deserve our attention.

This includes indoor wireless location accuracy. That may sound complicated, but the premise is simple. No matter where you are when you call 911 and no matter what kind of phone you use, you want first responders to find you. When you call 911 from a wired phone, first responders know where you are and where to send help. When you call 911 from a wireless phone outdoors, the Commission has standards that help ensure first responders can locate you and send assistance. But when you call from a wireless phone indoors, cross your fingers, because no location accuracy standards apply. That is an unacceptable gap in our policies. After all, today more than 70 percent of calls to 911 are made from wireless phones. That is over 400,000 calls per day. A lot of these calls are made from indoors. So it is time for a rulemaking to address this problem.

But our work cannot end there. My colleague, Commissioner Pai, has highlighted another critical gap in our 911 infrastructure. So many of our nation's hotels and office buildings rely on multi-line telephone systems for voice service. Although these systems may serve us well when we work and travel, they can come up short in an emergency. I am happy to see that Commissioner Pai is working to find a solution. His efforts have my full support.

Thank you to the Public Safety and Homeland Security Bureau for your work. It may be a number we may never want to call, but every one of us is grateful for the time you spend on 911. Thank you also to the Chairman for making this - and public safety - a priority.

STATEMENT OF
COMMISSIONER AJIT PAI

Re: *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications*, PS Docket No. 11-153; *Framework for Next Generation 911 Deployment*, PS Docket No. 10-255.

The deployment of Next Generation 911 (NG911) holds great promise for improving our nation's emergency response capabilities. I am a strong supporter of NG911 and am pleased to vote for today's item because I am optimistic that it will help text-to-911 functionality become one of the first NG911 features available to the American people.

This is good news for deaf and hard of hearing individuals, as well as those with speech impediments. This is good news for domestic violence victims and others whose lives may depend on non-verbal communication in an emergency. And this is good news for anyone who for any reason cannot place a voice call to first responders. For all of these Americans, the ability to text 911 may mean the difference between life and death.

I appreciate my colleagues' willingness to incorporate my input into today's item. For example, the Further Notice of Proposed Rulemaking seeks comment on an expanded role for IP Relay providers in this area. Those providers are uniquely suited to make sure that whenever a deaf or hard of hearing American tries to reach emergency personnel, the message will get through—directly as a text wherever text-to-911 is available and through relay interpretation elsewhere. The item also asks about reasonable timeframes for interconnected text providers to implement text-to-911 functionality. Not every text provider is in the same situation—technologically, financially, and otherwise—and we must make sure we understand the unique challenges of each class of provider rather than simply lumping them all together.

As we move forward in this proceeding, we also must remember this: Whenever possible, Americans should call—not text—911. For one, most public safety answering points (PSAPs) are currently unable to accept and process text messages, which means that calls will go through in many places where texts cannot. For another, a call gives first responders more concrete location information, as well as better situational awareness. That's why public safety organizations agree that the right decision is to talk, rather than text, whenever possible.

I want thank the diligent staff in the Public Safety and Homeland Security Bureau for their hard work on this item and look forward to continuing to work with them on this important issue.

Finally, as innovative as text-to-911 functionality is, I want to close by noting that we still have a ways to go on 911 basics. In particular, Americans expect that if they call 911 from a hotel, motel, or office building, they will reach someone who can help. But as the nation learned from a tragic case last month, that isn't true.

On December 1, Kari Rene Hunt Dunn met her estranged husband in a Marshall, Texas hotel room so that he could visit their three children, ages nine, four, and three. During that encounter, Kari's husband forced her into the bathroom and began stabbing her. Kari's nine-year-old daughter did exactly what every child is taught to do during an emergency. She picked up the phone and dialed 911. The call didn't go through, so she tried again. And again. And again. All in all, she dialed 911 four times—but she never reached emergency personnel. Why? Because the hotel's phone system required her to dial 9 to get an outside line. Tragically, Kari died as a result of this vicious attack.

Kari's daughter behaved heroically under horrific circumstances. But the hotel's phone system failed her, her mother, and her entire family. Earlier this month, I began an inquiry to determine what steps can be taken to prevent tragedies like Kari's from happening again. I am enormously gratified by the reaction that this issue has received so far. Awareness of this problem is clearly on the rise. Our nation's hotel industry has already formed a task force to tackle the issue, and I look forward to working

with them closely.

Kari is gone, and there is nothing we can do to bring her back. But her death will not be in vain if we can take action to ensure that whenever someone tries to reach 911, they connect with emergency personnel. That's the message that I heard when I had the privilege of speaking to Kari's father recently. That's the message I've gotten from public safety communications experts. That's the message delivered in today's item. And over the coming weeks and months, that's the goal I intend to accomplish.

STATEMENT OF
COMMISSIONER MICHAEL O'RIELLY

Re: *Facilitating the Deployment of Text-to-911 and Other Next Generation Applications*, PS Docket No. 11-153; *Framework for Next Generation 911 Deployment*, PS Docket 10-255.

The Commission has a responsibility to promote the safety of life and property of the American public using certain communications services. Americans must be able to reach 911 operators to ensure that first responders are dispatched in a time of need. For this reason, I approve today's inquiry into text-to-911 capability.

Notwithstanding my overall support, I do have some reservations and questions that need to be addressed going forward. First, as I have stated on several occasions, it is the Commission's duty to faithfully implement the laws of Congress and part of that is ensuring that the Commission remains within the bounds of its statutory authority. I will, of course, keep an open mind as I review the record, but I am concerned about our legal authority to regulate in this area, especially in regard to over-the-top text providers. I am pleased that this notice provides further opportunity for commenters to supplement the record regarding the Commission's authority to potentially implement text-to-911 requirements.

Second, in the rulemaking process, the Commission has the obligation to ask questions, collect data, and acquire a complete record to inform its decision-making. I have been disappointed that the record in this proceeding contains many weakly supported assertions and outdated data. I hope commenters will provide up-to-date statistics to demonstrate whether or not Americans expect text-to-911 capability and are using it currently, even if they are receiving bounce-back messages. I also want to hear from the deaf and hard of hearing users and those with speech disabilities about the benefits that they obtain from texting and their needs and expectations. I am confident that the contents of this notice will prompt a robust response from commenters.

I also look forward to engaging with interconnected text providers—many of which have not been active in this proceeding—and the smaller wireless companies regarding the timeframes and challenges of implementing text-to-911. From what I see, the record contains no input—except for one short *ex parte* letter[110]—from the top three text applications.[111] Although their focus is appropriately on their businesses and not on the FCC, I am hopeful that interconnected text providers will submit comments in response to this latest notice to help us determine what is technically feasible or achievable.

Third, I am particularly interested in learning more from stakeholders about the costs of implementing text-to-911. Since most applications run on a zero or minimal profit basis, could the increased cost of such regulations put at risk the availability of free texting applications or prevent new entry? Do potential problems regarding location accuracy and the routing of texts to the appropriate PSAP while texters are roaming raise liability concerns and, therefore, significantly increase the costs of doing business? Could regulatory mandates ultimately drive text providers out of the application

[110] Letter from David J. Dougall, Director, Accessibility & Sustainability, Research In Motion, to Marlene H. Dortch, Secretary, Federal Communications Commission (Apr. 26, 2012).

[111] Letter from H. Russell Frisby, Jr., Counsel to TeleCommunication Systems, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, at Attachment (Dec. 9, 2013).

business? And what are the potential consequences to consumers, especially those with disabilities, if these costs chill innovation and limit the various options available to consumers?

Fourth, I am troubled by the suggestion that the Commission may expand text-to-911 requirements to additional non-traditional applications, such as non-interconnected text messaging. There are many questions—such as statutory authority and whether it is technically feasible or achievable for these applications to connect to 911—that need to be answered before we proceed down this path.

Finally, it is extremely important for public safety purposes that we do not raise consumer expectations that text-to-911 will soon be a viable alternative to a phone call. Even if text-to-911 is deployed by CMRS and interconnected text providers in the near future, the vast majority of PSAPs throughout the nation are not capable of receiving texts. Ultimately, text-to-911 will only be successful if the PSAPs can receive the message. Additionally, the usefulness of text-to-911 may be further diminished if the information provided to PSAPs does not provide adequate location information for those who text for help and if the texts of those in need who are roaming are routed to the wrong PSAP. Americans must know how they can reliably communicate with 911, therefore we must ensure that the current limitations of texting to 911 are understood and that everyone knows that a phone call is still best in an emergency.

I thank the Chairman and his staff for incorporating several of my proposed edits and the staff of the Public Safety and Homeland Security Bureau for their hard work on this item.