

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

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

SECOND REPORT AND ORDER AND
THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

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By the Commission: Chairman Wheeler and Commissioner Rosenworcel issuing separate statements;
Commissioner Clyburn approving in part, dissenting in part and issuing a statement; Commissioner
O’Rielly concurring in part, dissenting in part and issuing a statement; Commissioner Pai dissenting and
issuing a statement.

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I. INTRODUCTION

1. In this *Second Report and Order and Third Further Notice of Proposed Rulemaking*, we affirm the Commission’s commitment to ensuring access to emergency services for all Americans. The Commission’s rules must evolve as legacy networks and services transition to next generation technologies, and as consumer expectations and needs evolve. Current trends in mobile wireless usage show the continued evolution from a predominantly voice-driven medium of communication to one based more on text and data transmissions. The need to provide text-to-911 service in a timely manner is made more pressing because many consumers believe text-to-911 is already an available service, because of the unique value of text-to-911 for the millions of Americans with hearing or speech disabilities, and because of the crucial role it can play in protecting life and property when making a voice call would be dangerous, impractical, or impossible due to transmission problems. We therefore take action today to ensure that the potentially life-saving benefits of text-to-911 are available to all consumers as swiftly as possible.

2. In the *Second Report and Order*, we require that Commercial Mobile Radio Service (CMRS) providers and other providers of interconnected text messaging applications (collectively, “covered text providers”) be capable of supporting text-to-911 service by December 31, 2014.¹ Covered

¹ 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 two-way interconnected text applications. “Covered text providers” includes all CMRS providers, as well as all providers of interconnected text messaging services that enable consumers to send text messages to and receive text messages from all or substantially all text-capable U.S. telephone numbers, including through the use of applications downloaded or otherwise installed on mobile phones. See 47 C.F.R. § 20.18(n)(1). For purposes of text-to-911, we divide text applications into two broad categories: (1) interconnected text applications that 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, 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. We limit initial application of our text-to-911 requirements to interconnected texts, as the term “interconnected” has been defined for purposes of text-to-911, and this definition should not be construed as affecting the definition of “interconnected service” in the context of Section 332 of the Communications Act. See 47 U.S.C. § 332(d)(2).

text providers will have until June 30, 2015, or six months from the date of a Public Safety Answering Point (PSAP) request, whichever is later, to implement text-to-911 for that PSAP. In the *Third Further Notice of Proposed Rulemaking (Third Further Notice)*, we seek comment on technical issues related to the provision of enhanced location information and support for roaming for texts to 911, as well as the capabilities of future texting services.

II. BACKGROUND

3. In September 2011, the Commission released a *Notice of Proposed Rulemaking (Notice)*, which sought comment on a number of issues related to the deployment of Next Generation 911 (NG911), including how to implement text-to-911.² In the *Notice*, the Commission stated that sending text messages, photos, and video clips has become an everyday activity for mobile device users on 21st century broadband networks, and that adding non-voice capabilities to our 911 system will substantially improve emergency response, save lives, and reduce property damage,³ as well as expand access to emergency help, both for people with disabilities and for people in situations where placing a voice call to 911 could be difficult or dangerous.⁴

4. In December 2012, AT&T, Sprint Nextel, T-Mobile, and Verizon Wireless 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 be capable of providing text-to-911 service to requesting PSAPs by May 15, 2014 (Carrier-NENA-APCO Agreement).⁵ As part of the Carrier-NENA-APCO Agreement, the four major carriers committed to implementing text-to-911 service to a PSAP making a “valid” request of the carrier “within a reasonable amount of time,” not to exceed six months.⁶ Carriers promised to meet these commitments “independent of their ability to recover these associated costs from state or local governments.”⁷ Carriers also committed to working with NENA and APCO and the Commission to develop outreach for consumers and support efforts to educate PSAPs.⁸ The commitments specifically did not extend to customers roaming on a network.⁹

² Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment, PS Docket Nos. 10-255 and 11-153, *Notice of Proposed Rulemaking*, 26 FCC Rcd 13615 (2011) (*Notice*).

³ *Id.* at ¶¶ 1-2.

⁴ *Id.* at ¶¶ 1-2. The Commission also noted that incorporating text and multimedia into the 911 system would provide improved information that could be integrated with information from existing databases to enable emergency responders to evaluate and respond to emergencies more quickly and effectively. *Id.*

⁵ See Letter from Terry Hall, APCO International; Barbara Jaeger, National Emergency Number Association (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 Nos. 10-255 and 11-153 (filed Dec. 6, 2012) (Carrier-NENA-APCO Agreement). We note that the rules adopted herein are generally consistent with the Carrier-NENA-APCO Agreement.

⁶ Carrier-NENA-APCO Agreement at 2. The Carrier-NENA-APCO agreement specified that a PSAP request was valid if, at the time the request is made, “a) the requesting PSAP represents that it is technically ready to receive 9-1-1 text messages in the format requested; and b) the appropriate local or State 9-1-1 service governing authority has specifically authorized the PSAP to accept and, by extension, the signatory service provider to provide, text-to-9-1-1 service (and such authorization is not subject to dispute).” *Id.* 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. *Id.*

⁷ *Id.* at 3.

⁸ *Id.*

⁹ *Id.* (“A voluntary SMS-to-9-1-1 solution will be limited to the capabilities of the existing SMS service offered by a participating wireless service provider on the home wireless network to which a wireless subscriber originates an

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5. Also in December 2012, the Commission released a *Further Notice of Proposed Rulemaking (Further Notice)*,¹⁰ which proposed, *inter alia*, to require all CMRS providers, as well as interconnected text messaging providers, to support text messaging to 911 in all areas throughout the nation where PSAPs are capable of and prepared to receive the texts.¹¹ The Commission defined interconnected text messaging applications as those using 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 Short Message Service (SMS) protocols.¹² The *Further Notice* stated that “the record indicates that text-to-911 is technically feasible and can be achieved in the near term at reasonable cost to PSAPs, CMRS providers, and providers of interconnected text.”¹³ The *Further Notice*’s proposed requirements were based on the Carrier-NENA-APCO Agreement, and the Commission sought comment on whether all CMRS providers, including regional, small and rural CMRS providers, and all interconnected text providers could achieve these milestones in the same or similar timeframes.¹⁴ The *Further Notice* noted the extent to which consumers had begun to gravitate toward IP-based messaging applications as their primary means of communicating by text, that consumers may reasonably come to expect these applications to also support text-to-911, and that consumer familiarity is critical in emergency situations where each second matters.¹⁵ To that end, the *Further Notice* sought to ensure consumers’ access to text-to-911 capabilities on the full array of texting applications available today – regardless of provider or platform.¹⁶

6. Recognizing that text-to-911 would not be rolled out uniformly across the country or across text messaging platforms, the Commission took steps to provide consumers with clarity regarding the availability of text-to-911. In May 2013, the Commission issued a *Report and Order* requiring covered text providers to provide consumers attempting to send a text to 911 with an automatic bounce-back message when the service is unavailable.¹⁷ The Commission found a “clear benefit and present need” for persons who attempt to send text messages to 911 to know immediately if their text cannot be delivered to the proper authorities.¹⁸ The Commission noted specifically that, “[a]s these applications

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SMS message. SMS-to-9-1-1 will not be available to wireless subscribers roaming outside of their home wireless network. Each implementation of SMS-to-9-1-1 will be unique to the capabilities of each signatory service provider or its Gateway Service Provider.”)

¹⁰ Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications Framework for Next Generation 911 Deployment, PS Docket Nos. 10-255 and 11-153, *Further Notice of Proposed Rulemaking*, 27 FCC Rcd 15659 (2012) (*Further Notice*).

¹¹ *Further Notice*, 27 FCC Rcd at 15660 ¶ 2.

¹² *Id.* at 15660 ¶ 2 n. 2.

¹³ *Id.* at 15682 ¶ 58.

¹⁴ *Id.* at 15661 ¶ 3.

¹⁵ *Id.* at 15661-62 ¶ 6.

¹⁶ *Id.*

¹⁷ Facilitating the Deployment of Text-to-911 & Other Next Generation 911 Applications, PS Docket Nos. 10-255 and 11-153, *Report and Order*, 28 FCC Rcd 7556 (2013) (*Bounce-Back Order*). On reconsideration, the Commission clarified that the rules do not apply to text messages 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).

¹⁸ *Bounce-Back Order*, 28 FCC Rcd at 7561 ¶ 13 (citing *Further Notice*, 27 FCC Rcd at 15662 ¶ 7 n. 7); Letter from Christy Williams, 9-1-1 Program Manager, North Central Texas Council of Governments, to David S. Turetsky, Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission, PS Docket Nos. 10-255 and 11-153 (filed Nov. 1, 2012).

proliferate, consumers are likely to assume that they should be as capable of reaching 911 as any other telephone number.”¹⁹

7. In January 2014, we adopted a *Policy Statement* stating that the Commission believes that every provider of a text messaging service that enables a consumer to send text messages using numbers from the North American Numbering Plan (NANP) should support text-to-911 capabilities.²⁰ We clarified that the Commission intends to take a technologically neutral approach to any rules adopted for text-to-911 service, and it encouraged voluntary agreements to support text-to-911.²¹

8. We also released a *Second Further Notice of Proposed Rulemaking (Second Further Notice)* seeking comment on technical issues for the implementation of text-to-911 service with respect to interconnected text providers, the provision of location information with texts to 911, and roaming support for text-to-911 service.²² Specifically, the *Second Further Notice* sought comment on, *inter alia*, proposed timeframes for the implementation of text-to-911 capability by CMRS providers other than the signatory parties of the Carrier-NENA-APCO Agreement, as well as proposed timeframes for the implementation of text-to-911 service by interconnected text providers; proposed message delivery models and other implementation details for interconnected text providers; the costs associated with the proposals; roaming and location issues; PSAP implementation of text-to-911; and a variety of legal issues relating to text-to-911, including liability protection, waiver relief, and the treatment of voluntary agreements.

III. SECOND REPORT AND ORDER

9. As we observed in the *Second Further Notice*, the progress already made by the four signatories to the Carrier-NENA-APCO Agreement by January 2014 “illustrates the technical feasibility” of text-to-911 implementation for other CMRS providers, including small and rural providers, particularly in light of adoption of the ATIS standard for text-to-911 over the SMS platform.²³ Subsequent progress reports by these four providers have served further to confirm that view,²⁴ and over a year ago the

¹⁹ See *Bounce-Back Order*, 28 FCC Rcd at 7561 ¶¶ 9-13 (discussing the record evidence regarding consumer expectations). See also Comments of Heywire, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 9 (“[This] issue is . . . confused by non-interconnected text providers using terminology of providing ‘text’ing’ services and in some cases, using the person’s mobile phone number for identification purposes and/or sending an ‘authorization’ SMS message to the person’s mobile phone as part of the registration and provisioning process for the non-interconnected provider service.”) (Heywire Second Further Notice Comments).

²⁰ *Facilitating the Deployment of Text-to-911 & Other Next Generation 911 Applications Framework for Next Generation 911 Deployment*, PS Docket Nos. 10-255 and 11-153, *Policy Statement*, 29 FCC Rcd 1547 (2014) (*Policy Statement*).

²¹ *Id.*

²² *Facilitating the Deployment of Text-to-911 & Other Next Generation 911 Applications Framework for Next Generation 911 Deployment*, PS Docket Nos. 10-255 and 11-153, *Second Further Notice of Proposed Rulemaking*, 29 FCC Rcd 1547 (2014) (*Second Further Notice*).

²³ *Second Further Notice*, 29 FCC Rcd at 1552 ¶ 19.

²⁴ See Letter from Jamie Tan, Director, Federal Regulatory, AT&T Services, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission (filed May 15, 2014) at 1 (stating that AT&T is now capable of supporting text-to-911 nationwide for requesting PSAPs and is already working with PSAPs to “turn up service”); Letter from Ray Rothermel, Counsel, Legal/Government Affairs, Sprint Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission (filed May 16, 2014) at 1 (stating that Sprint now supports text-to-911 for requesting PSAPs and is working with PSAPs who had made requests by the date of the letter); Letter from Steve B. Sharkey, Senior Director, Federal Regulatory Policy, T-Mobile USA, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission (filed Apr. 1, 2014) at 3 (stating that T-Mobile is on track to meet its voluntary commitment to provide text-to-911 service nationally by May 15, 2014); Letter from Kevin Green, Executive Director, Federal Regulatory Affairs, Verizon Wireless, to Marlene H. Dortch, Secretary, Federal Communications

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Competitive Carriers Association (CCA) supported the proposed deadline of December 31, 2014, as an achievable goal.²⁵ As we show below, there is substantial evidence in the record supporting those views, as to both CMRS providers and interconnected text providers. Nor is there any serious question as to the overwhelming public interest benefits to be derived from prompt implementation of text-to-911 or the relatively minimal cost of such a requirement to covered providers and PSAPs.

A. Adoption of Text-to-911 Requirements

10. In this *Second Report and Order*, we require that all CMRS and interconnected text providers (collectively, “covered text providers”) must be capable of supporting text-to-911 by December 31, 2014. “Text-to-911” refers to a service by which a consumer may send a text message to 911 in search of emergency assistance. A 911 text message is a message, consisting of text characters, sent to the short code “911” and intended to be delivered to a PSAP by a covered text provider, regardless of the text messaging platform used.²⁶ Covered text providers have six months from December 31, 2014 – *i.e.*, until June 30, 2015 – to begin delivering 911 text messages to PSAPs that have submitted a valid request for text-to-911 service on or before December 31, 2014, unless another timeframe is mutually agreed upon by the individual PSAP and the covered text provider.²⁷ Covered text providers have six months from any valid PSAP request received after December 31, 2014, to commence delivery of text-to-911 for that PSAP. In the sections below, we explain the basis for adopting text-to-911 rules, including the significant and potentially life-saving benefits that text-to-911 affords, and set forth the scope and extent of our text-to-911 requirements. We also show that the deadlines adopted are achievable and technically feasible for covered text providers.

1. Public Policy Analysis

11. In the *Further Notice*, we sought comment on a case study concerning the costs and benefits associated with implementing text-to-911 service.²⁸ We also observed that the four major CMRS providers had voluntarily agreed to implement text-to-911 capability without seeking recovery of such costs from state or local government, which suggested that the implementation costs associated with text-to-911 are manageable.²⁹ Subsequently, in the *Second Further Notice*, we sought comment on the cost of implementation for other covered text providers (including small and rural CMRS providers, as well as providers of interconnected text messaging services).³⁰

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Commission (filed Apr. 1, 2014) at 1 (stating that Verizon remains on track to make this capability available to capable PSAPs by the May 15, 2014 date set forth in the Voluntary Agreement).

²⁵ Letter from Rebecca Murphy Thompson, General Counsel, Competitive Carrier Association, to Marlene H. Dortch, Secretary, Federal Communications Commission (filed Mar. 12, 2013) at 1 (CCA March 12, 2013 *Ex Parte*), cited in *Second Further Notice*, 29 FCC Rcd at 1554 ¶ 19 & n.43.

²⁶ As with the bounce-back requirement, we clarify that legacy devices that are incapable of sending texts via three digit short codes are not subject to our text-to-911 requirements, provided the software for these devices cannot be upgraded over the air to allow text-to-911. See *Bounce-Back Order*, 28 FCC Rcd at 7582-83. If the device’s text messaging software can be upgraded over the air to support a text to 911, however, then the covered text provider must make the necessary software upgrade available.

²⁷ We discuss the elements of a “valid” PSAP request below. See *infra* Section III.A.3, para. 51.

²⁸ *Further Notice*, 27 FCC Rcd at 15686 ¶ 68.

²⁹ *Id.* at 15713 ¶ 147.

³⁰ *Second Further Notice*, 29 FCC Rcd 1557-58 at ¶¶ 35-36.

a. **Benefits of Text-to-911**

(i) **Availability and Ease of Use**

12. The effectiveness of the legacy voice 911 system is in large part derived from its ease of use. People faced with the stress of emergency situations can communicate more quickly and effectively when they are able to use the same ubiquitous technologies that they use for everyday communications.³¹ This principle, which has long been applicable to voice calling, is increasingly true for text messaging communication as well. CTIA estimates that 2.19 trillion text messages were sent in 2012,³² and according to the Pew Center, more than 7 out of 10 cell phone users send or receive text messages.³³ Another report suggests that 91 percent of smartphone owners actively use SMS.³⁴ Moreover, the average in billable minutes of mobile voice use of the four major CMRS providers has declined steadily since 2009, with evidence that the decline is due to substitution of mobile voice by mobile messaging and other mobile data services.³⁵ Thus, as the Commission has stated before, expanding existing text technology to support 911 will provide the public with a familiar mode of communication for emergency use,³⁶ and we anticipate that subscribers will continue to use text messaging at the same or a greater rate than in the past.³⁷

(ii) **Enhanced Access for People with Disabilities**

13. Another benefit of widespread text-to-911 availability will be enhanced access to emergency services for people with disabilities. Currently, approximately 48 million people in the United

³¹ See *Bounce-Back Order*, 28 FCC Rcd at 7561-62 ¶ 15 (citing *Further Notice*, 27 FCC Rcd at 15661-62 ¶ 6) (recognizing overall trends and the expectations of all consumers using smartphones and other advanced mobile devices that they “should be capable of reach 911 as any other telephone number” regardless of the device or application that they use). See also Emergency Access Advisory Committee (EAAC), Report on Emergency Calling for Persons with Disabilities, Survey Review and Analysis (July 21, 2011) at 30, Question 23 (EAAC Survey Report). When asked how important it is that they are able to call 911 using the same device (using text, video, voice, and/or captioned telephone) that they use to typically communicate with friends and co-workers every day, between 86 percent and 98 percent of the EAAC survey respondents in each disability group said that it was **very important or somewhat important** that they are able to call 911 using the same device they use every day. *Id.* (Emphasis added).

³² CTIA-The Wireless Association, Wireless Industry Summary Report, Year-End 2012 Results (2013), available at <http://www.ctia.org/resource-library/facts-and-infographics/archive/us-text-messages-sms> (last accessed June 18, 2014).

³³ Smith, Aaron, Pew Internet Research Project, “Americans and Text Messaging” (Sept. 19, 2011), available at <http://www.pewinternet.org/2011/09/19/americans-and-text-messaging/> (noting that 73 percent of users send or receive text messages) (last accessed May 28, 2014).

³⁴ See Press Release, “U.S. Research by Acision Shows SMS Is Still the King of Messaging With Speed, Reach and Reliability Named as Key Reasons for Usage Over Alternative Services,” May 9, 2012, available at <http://finance.yahoo.com/news/us-research-acision-shows-sms-110000710.html> (last accessed May 28, 2014).

³⁵ Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, WT Docket No. 11-186, *Sixteenth Report*, 28 FCC Rcd 3700, 3867 ¶ 261 (2013) (*Sixteenth Annual Competition Report*).

³⁶ *Further Notice*, 27 FCC Rcd at 15677 ¶ 49.

³⁷ In fact, some people already believe they can text to 911. The North Central Texas Council of Governments (NCTCOG) asserts that much of the public already expects to be able to use text-to-911. NCTCOG highlights that “a recent market study...showed that approximately 1/3 of our population believe they can text 9-1-1 today.” See *Further Notice* at 15676 ¶ 46, citing NCTCOG Nov. 1, 2012 *Ex Parte* at 1. Additionally, prime-time television shows have featured main characters who are deaf or hard of hearing using text-to-911 to get emergency assistance. See, e.g., ABC Family, “Switched at Birth” Season 3, Episode 7 (rel. Feb. 24, 2014).

States are deaf or hard of hearing, and approximately 7.5 million people have speech disabilities.³⁸ Moreover, as people age, they become more likely to encounter hearing loss, with the result that such challenges are borne disproportionately by the elderly. For example, 18 percent of American adults between the ages of 45-64 years old have a hearing loss, 30 percent of adults between the ages of 65-74 years have a hearing loss, and 47 percent of adults who are 75 years old or older have a hearing loss.³⁹ By 2030, 20 percent of the population will be over 65 years old, substantially increasing the number of Americans who may need alternatives to voice communications when trying to reach 911.⁴⁰ Furthermore, the U.S. Department of Veterans Affairs reports that the two most common injuries among soldiers returning from overseas are tinnitus⁴¹ and hearing loss, with more than 1,746,000 veterans receiving compensation for these injuries in 2012.⁴²

14. In the *Second Further Notice*, we explained that people who are deaf, hard of hearing, or speech disabled have been consistently migrating away from specialized legacy devices, and towards more ubiquitous forms of text messaging communications because of the ease of access, wide availability, and practicability of modern text-capable devices.⁴³ This migration has had the unique benefit of bringing these users into the mainstream of our nation's communications systems, but it also has led some commenters to suggest that it leaves people who are deaf, hard of hearing, or speech disabled without an effective, reliable and direct means of accessing 911 services in the event of an emergency.⁴⁴

15. The Commission's Emergency Access Advisory Committee (EAAC) noted that individuals who are deaf, hard of hearing, or speech-disabled and need to communicate with 911 via voice currently have no direct means of accessing 911 while mobile other than through attaching a

³⁸ This includes individuals who have cerebral palsy, Parkinson's disease, Amyotrophic Lateral Sclerosis (ALS or Lou Gehrig's Disease), aphasia, Huntington's disease, and speech disabilities such as stuttering or stammering. See, e.g., National Institute on Deafness and Other Communication Disorders, National Institutes of Health, *available at* <http://www.nidcd.nih.gov/health/statistics/pages/vsl.aspx> (last accessed June 24, 2014).

³⁹ See Quick Statistics, National Institute on Deafness and Other Communication Disorders, *available at* <http://www.nidcd.nih.gov/health/statistics/Pages/quick.aspx> (last accessed May 28, 2014).

⁴⁰ See Hobbs, Frank B., The Elderly Population, U.S. Census Bureau, *available at* <http://www.census.gov/prod/1/pop/p23-190/p23-190.pdf> (noting "[a]bout 1 in 8 Americans were elderly in 1994, but about 1 in 5 would be elderly by the year 2030"), at 2-2 (last accessed May 28, 2014).

⁴¹ Tinnitus is the medical term for the perception of sound in one or both ears or in the head when no external sound is present. Tinnitus can be intermittent or constant, and its perceived volume can range from subtle to shattering. See American Tinnitus Association, "ATA's Top 10 Most Frequently Asked Questions," *available at* <http://www.ata.org/for-patients/faqs> (last accessed June 2, 2014). Tinnitus is not hearing loss, but because it interferes with one's ability to hear and can be exacerbated by cell phone use, tinnitus sufferers may opt to use text messaging over voice telephony. See e.g., Torsoli, Albertina, "Prolonged Mobile Phone Use Increases Risk of Ear Ringing, Study Indicates," BLOOMBERG (July 7, 2010), *available at* <http://www.bloomberg.com/news/2010-07-19/prolonged-mobile-phone-use-increases-risk-of-ear-ringing-study-indicates.html> (last accessed June 25, 2014).

⁴² See U.S. Department of Veterans Affairs, Annual Benefits Report for FY 2012 at 18, *available at* http://www.benefits.va.gov/reports/abr/2012_abr.pdf (last accessed May 28, 2014). See also Briggs, Bill, "Hearing Loss the Most Prevalent Injury among Returning Veterans," NBC NEWS (Nov. 13, 2012), *available at* <http://usnews.nbcnews.com/news/2012/11/13/14728839-hearing-loss-the-most-prevalent-injury-among-returning-veterans?lite> (last accessed May 28, 2014).

⁴³ *Notice*, 26 FCC Rcd at 13629-30 ¶ 36.

⁴⁴ See, e.g., Comments of Richard L. Ray, PS Docket Nos. 10-255 and 11-153 (filed Dec. 12, 2011), at 1-2; Comments of King County E911 Program, PS Docket Nos. 10-255 and 11-153 (filed Dec. 13, 2011), at 3; Comments of Consumer Groups, PS Docket Nos. 10-255 and 11-153 (filed Dec. 12, 2011), at 3; Comments of Krystalo Tziallila, PS Docket Nos. 10-255 and 11-153 (filed Dec. 12, 2011), at 1.

separate teletype (TTY) device to their cellphone.⁴⁵ However, the vast majority of people who are deaf, hard of hearing, or speech-disabled has discarded TTYs or has never acquired or used a “mobile” TTY, and thus no longer has a practicable means of directly accessing 911.⁴⁶ Nevertheless, the EAAC found that many individuals who are deaf have service plans that include SMS.⁴⁷ One key finding of the EAAC is that “individuals with disabilities should be able to call 9-1-1 using the same means they use for everyday telecommunication.”⁴⁸

16. Today, in the absence of text-to-911, individuals who are deaf, hard of hearing, or speech disabled and who do not use TTYs have no other feasible option but to rely on telecommunications relay services (TRS) to access 911 emergency services,⁴⁹ unless they are with another individual who can make a voice call on their behalf. Text-based relay services usually transmit the emergency text message first to a communications assistant (CA), who then places a call to the PSAP. The CA then relays the conversation between the individual and the PSAP, by voicing all text that is typed by the person with a disability to the PSAP call taker and typing the call taker’s responses to the caller.⁵⁰ Many have criticized TRS as serving only as an indirect means of emergency access that can result in delays and translation errors.⁵¹

⁴⁵ Emergency Access Advisory Committee, Report and Recommendations (Dec. 7, 2011) at 29 (EAAC Report). The EAAC was required to make its recommendations to the Commission by December 7, 2011, which the Commission was then empowered to implement by regulation. *See infra* Section III.F (discussion the Commission’s legal authority). A TTY, also sometimes called a “TDD,” is a text device that employs graphic communication in the transmission of coded signals through a wire or radio communication system. *See* 47 CFR § 64.601(22); Telecommunications Services for Individuals with Hearing and Speech Disabilities and the Americans with Disabilities Act, *Report and Order and Request for Comments*, 6 FCC Rcd 4657 at 4657 ¶ 1, n.1 (1991).

⁴⁶ *But see* Emergency Access Advisory Committee, Report on TTY Transition (rel. Mar. 2013) at 14 (outlining reasons for retaining the TTY until there is an appropriate substitute. For instance, deaf-blind individuals may not have other communication solutions available at this time).

⁴⁷ EAAC Report at 29.

⁴⁸ *Id.* at 30.

⁴⁹ *See* 47 U.S.C. § 225, codifying the requirement in Title IV of the ADA for the Commission to establish a nationwide TRS program. This program has been in place since 1993. *See generally* 47 C.F.R. § 64.601 *et seq.*

⁵⁰ *Notice*, 26 FCC Rcd at 13638 ¶ 27. There are various other types of TRS, including video relay services, by which individuals who are deaf, hard of hearing, or speech disabled can relay messages through CAs who know sign language, and speech-to-speech TRS, by which individuals with speech disabilities can communicate with other parties through CAs who are trained to understand difficult-to-understand speech. Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, *Report and Order, Order on Reconsideration, and Further Notice of Proposed Rulemaking*, CC Docket 90-571, CC Docket 98-67, CG Docket 03-123, 19 FCC Rcd 12224 (2004) and Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, *Report and Order and Further Notice of Proposed Rulemaking*, CC Docket No. 98-67, CG Docket No. 03-123, 18 FCC Rcd 12823 (2003).

⁵¹ *Further Notice*, 27 FCC Rcd at 15679 ¶ 53; *see also* BRETSA Second Further Notice Comments at 33-34 (“Relay Services are neither staffed nor equipped to handle 9-1-1 communications, including to provide voice-relay of text messages.”). Consumer Groups has previously noted that IP Relay, one text form of TRS, has not been widely embraced by the deaf and hard of hearing community for emergency services for a number of reasons, including the relatively long length of time it takes to reach a relay operator and then get to the correct PSAP, the fact that the call could arrive on a non-emergency line, and the possibility of mistakes by the CA in the relaying of the call. *See, e.g.*, Reply Comments of Telecommunications for the Deaf and Hard of Hearing, Inc.; Deaf and Hard of Hearing Consumer Advocacy Network; Association of Late-Deafened Adults, Inc.; Deaf Seniors of America; National Association of the Deaf; Hearing Loss Association of America; Cerebral Palsy and Deaf Organization; Communication Service for the Deaf; and California Coalition of Agencies Serving the Deaf and Hard of Hearing (collectively, “Consumer Groups”), PS Docket Nos. 10-255 and 11-153 (filed Feb. 9, 2012) at 3-4, *citing* Comments

(continued....)

17. In the *Further Notice*, the Commission stated that the record in this proceeding and the EAAC Report had already shown that a significant number of people who are deaf, hard of hearing, or speech disabled will benefit from the ability to directly send a text message to 911 from any device that is text-capable.⁵² Moreover, enabling direct text messaging to 911 by the many people who are deaf, hard of hearing, or speech disabled will allow them to use mass market communication devices that have more advanced and increasingly evolving capabilities. While some commenters have been less supportive of SMS-to-911 because it does not support real-time text⁵³ – *i.e.*, the ability to send and receive text simultaneously with the time that it is typed without having to press a “send” key – they have given some support to SMS as a viable near-term solution because of its ease of use for people with disabilities and ubiquity in mainstream society.⁵⁴ Respondents to the EAAC survey expressed a clear preference for calling a PSAP using the same technology that they use on a daily basis.⁵⁵ Furthermore, 87.7 percent of EAAC respondents reported having used SMS text messaging and 46.1 percent reported having used SMS text messaging “almost every day.”⁵⁶

(iii) Alternative Means of Emergency Communication for the General Public

18. The ability to send text messages to 911 also will provide important benefits as an alternative means of emergency communication for the general public. Recent events, as well as the record in this proceeding, reflect that there are situations where being able to send a text message to 911 as opposed to placing a voice call could be vital to the caller’s safety. For example, in the 2007 shooting incident at Virginia Tech, a number of students attempted unsuccessfully to send SMS text messages to

(Continued from previous page) _____
of the Hearing Speech and Deafness Center, PS Dockets Nos. 11-153, 10-255, at 1-2 (Dec. 12, 2011) (Stating that “[O]ften it would take average 4 Or 5 minutes to connect to 9-1-1 agencies” for calls using IP Relay services).

⁵² *Further Notice*, 27 FCC Rcd at 15680 ¶ 54.

⁵³ *See, e.g.*, Reply Comments of Wireless RERC, PS Docket Nos. 10-255 and 11-153 (filed Apr. 5, 2013) at 8, quoting Comments of NENA, PS Docket Nos. 10-255 and 11-153 (filed Mar. 11, 2013) at 19 (NENA *Further Notice* Comments)(“The real-time, character-by-character nature of TTY is preferred over message-based text services by many in the deaf and hard of hearing community for its more conversational flow.”).

⁵⁴ *See, e.g.*, Comments of Consumer Groups, PS Docket Nos. 10-255 and 11-153 (filed Feb. 2, 2012), at 9 (“There is considerable support in the deaf, deaf-blind, late deafened, and hard of hearing community and among people with speech disabilities for the use of SMS because most people are familiar with SMS technology”). *See also* NENA *Further Notice* Comments at 5 (“The prevailing consumer text mode in the U.S. is SMS; this is also the most interoperable, working between nearly every device on every U.S. network”); Comments of King County E911 Program, PS Docket Nos. 10-255 and 11-153 (filed Apr. 9, 2013), at 4 (stating that it is “definitely the case” that the rapid growth in popularity of SMS messaging has generated consumer expectations that SMS will support 911 texting). Like TTY text, real-time text would allow character-by-character or word-by-word transmission of conversations with PSAP personnel as they are typed, which various parties to this proceeding have claimed is necessary for the instantaneous communication required in an emergency situation. *See e.g.*, Consumer Groups *Further Notice* Reply Comments at 13, n.36; NENA *Further Notice* Comments at 19-20. *See also* EAAC Survey Report at 23, Question 16 and 42, Question 29; EAAC Report, Recommendations P6.5, T2.2. While the Commission continues to explore the feasibility of real-time text capabilities for 911, we believe that the adoption of a text-to-911 requirement provides an important interim step in responding to the emergency access needs of people who are deaf, hard of hearing, or speech disabled.

⁵⁵ EAAC Report, Recommendation P1.2 at 19 (noting that in an emergency, people turn to what is known, and are not in a position to use something new); *see also* Consumer Groups Reply Comments at 10.

⁵⁶ EAAC Survey Report at 18, Question 11. Of 2,941 survey respondents, 1,614 respondents, or 55 percent, answered they have a cell phone with a wireless data plan in at least one setting. Of these 1,614 respondents, 1,300 respondents, or 44 percent, have a cell phone with a wireless data plan at home, 524 respondents, or 18 percent, have a cell phone with a wireless data plan through work, and 935 respondents, or 32 percent, have a cell phone with a wireless data plan for traveling or commuting. *See also* Wireless RERC *Further Notice* Comments at 3.

911, so as not to be heard and located by the shooter.⁵⁷ During the course of Black Hawk County, Iowa's text-to-911 trial, text messaging has been used in domestic and child abuse situations in which the victim feared that the suspect would overhear the call to 911.⁵⁸ Vermont's text-to-911 trial also demonstrated text-to-911's efficacy in cases involving suicide and domestic violence.⁵⁹

19. Text-to-911 can also provide a means of access to 911 when voice networks are compromised or congested.⁶⁰ In large-scale disasters, for example, landline and mobile voice networks may become overloaded, making it difficult to place a 911 voice call. In such cases, it may be much more likely for SMS and IP-based text messages to 911 still to be successfully transmitted because they consume far less bandwidth than voice and, given the packet-switched nature of text messages, can take advantage of alternate spectrum resources and traffic channels.⁶¹ In other words, people in disaster areas may still be able to send text messages to 911 even if they cannot place a voice call.⁶²

(iv) Estimated Valuation of Benefits Floor

20. In an effort to quantify the benefits associated with text-to-911, we conducted a cost-benefit analysis of the potential effect of text-to-911 specifically in the area of cardiac emergencies – a category that represents less than 10 percent of 911 calls but for which detailed statistical information is available.⁶³ As detailed in the *Further Notice*, even when we limit our analysis of benefits to this subset of total emergencies, we find that the potential benefits floor for text-to-911 for just this one category of 911 calls is \$63.7 million annually, solely based on potential use by the population with the most severe

⁵⁷ See Pinto, Barbara and Tejada, Alicia, “Could Being Able to Text 911 Save Lives?,” ABC NEWS (Mar. 27, 2011), available at <http://abcnews.go.com/Technology/text-911-save-lives/story?id=13235321> (last accessed May 29, 2014). Had these messages gone through, first responders might have arrived on the scene faster with firsthand intelligence about the life-threatening situation that was unfolding.

⁵⁸ Reply Comments of Black Hawk County, Iowa, PS Docket Nos. 10-255 and 11-153 (filed Feb. 2, 2012), at 3 (“The calls we have received range from domestic abuse situations where the victim was fearful for her life if the suspect overheard her calling 911, to a child texting 911 because they were being abused by a parent. In one particular case, a domestic abuse victim’s ability to text 911 resulted in no harm coming to her and the suspect being arrested on a violation of a no contact order.”)(Black Hawk County Notice Reply Comments). Likewise, there may be times when a loud noise may prevent a caller with tinnitus or a mild or temporary hearing loss – who generally can use voice telephone services – from being able to hear responses from a 911 call taker. In this situation, the ability to send a text message would provide a useful alternative for such an individual.

⁵⁹ See Letter from David H. Tucker, Executive Director, Vermont E9-1-1 Board, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket Nos. 10-255 and 11-153 (filed Aug. 27, 2012) at 2 (Vermont Aug. 27, 2012 *Ex Parte*).

⁶⁰ See, e.g., <http://www.fcc.gov/guides/emergency-communications>.

⁶¹ In a packet-switched network, the delivery of text messaging packets may be somewhat delayed if the communication channel is highly congested, whereas voice calls would be blocked in a circuit-switched network. TCS has previously noted that “[i]n situations in which a high 9-1-1 call volume results in blocked calls to the PSAP or situations in which the wireless infrastructure capacity is impacted such that placing voice calls is difficult or impossible, SMS communications to a PSAP may provide the only reasonable communications method to emergency services. “Letter from Kim Robert Scovill, Esq., Senior Director, Legal, Government, and Regulatory Affairs, TeleCommunication Systems, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket Nos. 10-255 and 11-153 (filed Nov. 9, 2012), at 2 (TCS Nov. 9, 2012 *Ex Parte*).

⁶² See *Further Notice*, 27 FCC Rcd at 15682 ¶ 57; *Notice*, 26 FCC Rcd at 13631-32 ¶ 41.

⁶³ *Further Notice*, 27 FCC Rcd at 15686 ¶ 68. A 2002 study of 911 calls in Pennsylvania found that cardiac emergency calls account for less than 20 percent of medical emergency calls and less than 10 percent of total emergency calls. See Athey, Susan and Stern, Scott, “The Impact of Information Technology on Emergency,” *The RAND Journal of Economics*, Vol. 22, No. 3 (Autumn 2002), available at <http://kuznets.fas.harvard.edu/~athey/itemer.pdf> (last accessed on July 8, 2014) (Cardiac Study).

hearing and speech disabilities.⁶⁴ These life-saving benefits provide a useful reference point for assessing the importance of timely and effective 911 communications to response time and positive outcomes for medical emergencies.⁶⁵

21. We emphasize that these benefits for cardiac emergencies represent only a subset of the total benefits that will be generated by text-to-911. And no commenter claims that text-to-911 will not yield these benefits. Moreover, the record reflects numerous other benefits that are less quantifiable but that may result in similar or even more substantial benefits.⁶⁶ These benefits, though not specifically quantifiable, provide convincing evidence that the aggregate benefits of text-to-911 will significantly exceed the specific benefits quantified here.

22. Few commenters questioned our cost-benefit analysis from the *Further Notice*. T-Mobile submitted that it is “concerned about the Commission’s reliance on the Cardiac Study,” but offered no alternative calculation of benefits or evidence that the Commission’s estimate was unreasonable.⁶⁷ APCO has previously argued that cost-benefit analyses “can obscure inherently qualitative social benefits” and urged the Commission “to resist the temptation to rely on [the *Further Notice*’s] analysis in its final decision, as it could establish a dangerous precedent for future matters involving public safety.”⁶⁸ We agree with APCO that relying on cost-benefit analyses may result in the subordination of important public policy objectives to market forces. We recognize that public safety interests are not driven solely by economic considerations. However, in this instance, our cost-benefit analysis and public policy objectives dictate the same result.

b. Implementation Costs

(i) CMRS Providers

23. The record indicates that the cost for CMRS providers to implement a text-to-911 solution is significantly less than the benefits floor discussed above. By one estimate, the total cost for all

⁶⁴ *Further Notice*, 27 FCC Rcd at 15688 ¶ 71. By “benefits floor,” we mean the minimum amount of benefits likely to be provided by text-to-911 services.

⁶⁵ Using contemporary Census data, the *Further Notice* limited its estimate to those most severe hearing and speech disabilities, and estimated that the total number of expected lives saved by text-to-911 from cardiac incidents alone would be approximately 29 lives. The Commission discounted the number of expected lives saved by roughly half, based on the assumption that in half the cases the disabled person could rely on a speaking person to make the 911 call. This is a conservative assumption, because it assumes that a disabled person never saves a life by using text-to-911 to help a non-disabled cardiac victim. No commenter challenged this estimate when we sought comment on this case study in the *Further Notice*. See *Further Notice*, 27 FCC Rcd at 15688 ¶ 71 n. 177. The United States Department of Transportation presently estimates the value of a statistical life (VSL) at \$9.1 million. See Memorandum from Polly Trottenberg, Assistant Secretary for Transportation Policy, and Robert S. Rivkin, General Counsel, to Secretarial Officers and Modal Administrators, U.S. Department of Transportation, “Treatment of the Economic Value of a Statistical Life in Departmental Analysis” (Feb. 28, 2013). The Department of Transportation defines VSL as “the additional cost that individuals would be willing to bear for improvements in safety (that is, reductions in risks) that, in the aggregate, reduce the expected number of fatalities by one.” *Id.* at 2.

⁶⁶ For example, Black Hawk County and Vermont have cited concrete examples where text-to-911 enabled callers who could not make a voice call for safety reasons to successfully reach 911. See Black Hawk County Notice Comments at 3. (“The calls we have received range from domestic abuse situations where the victim was fearful for her life if the suspect overheard her calling 911, to a child texting 911 because they were being abused by a parent. In one particular case, a domestic abuse victim’s ability to text 911 resulted in no harm coming to her and the suspect being arrested on a violation of a no contact order.”) See also Vermont Aug. 27, 2012 *Ex Parte* at 2.

⁶⁷ Comments of T-Mobile USA, Inc., PS Docket Nos. 10-255 and 11-153 (filed Mar. 11, 2013) at 4 n.8 (T-Mobile *Further Notice* Comments).

⁶⁸ Comments of APCO International, PS Docket Nos. 10-255 and 11-153 (filed Mar. 11, 2013), at 3 (APCO *Further Notice* Comments).

CMRS providers to implement text-to-911 nationwide will be approximately \$4 million annually over a period of five years (totaling \$20 million).⁶⁹ At \$20 million for the five year projection, this five year total cost is approximately one-third the annual potential benefits floor of \$63.7 million. Thus, considering the total estimated \$20 million implementation cost of text-to-911, we expect that this cost will be far exceeded by the program's estimated benefits floor in the first year of text-to-911 deployment alone.⁷⁰

24. In the *Second Further Notice*, we sought comment on the specific costs of requiring CMRS providers – other than those that are a party to the Carrier-NENA-APCO Agreement – to support text-to-911 service.⁷¹ We noted that small and rural CMRS providers may be able to achieve cost savings in their implementation by leveraging some of the text-to-911 infrastructure that would be in place by May 15, 2014,⁷² given that the four major CMRS providers would be providing text-to-911 by this date.

25. With regard to the cost of text-to-911 solutions for smaller CMRS providers, TCS states that “[t]ypically text-to-911 vendors price their services in such a way as to scale with the size of a potential carrier customer’s network. For instance, a provider may price its services on a per-cell-site basis or a per-PSAP basis. This then allows carriers of all sizes to purchase text-to-911 solutions at a cost relative to their size.”⁷³ NTCA supports our proposed December 31, 2014 implementation deadline.⁷⁴ Nevertheless, NTCA argues that “[s]ome rural carriers will require, at a minimum, a six-month window to be able to ... purchase and install new equipment prior to providing text-to-911 service. The systems are expensive, especially when viewed in light of a small rural wireless carrier’s limited operation and resources. Rural carriers would prefer ... only purchasing the new equipment once a PSAP has declared that [it] is ready able to accept text messages from the public.”⁷⁵ NTCA further argues that “if carriers are required to upgrade and purchase new equipment before their local PSAPs have declared that they are ready for text-to-911 service, the service provider will incur a loss for the value of money and the early use of the product warranty. Rural wireless subscribers also will have to prematurely bear the costs of the

⁶⁹ See Comments of Intrado, PS Docket Nos. 10-255 and 11-153 (filed Dec. 12, 2011), at 16-17 (Intrado Notice Comments); Letter from Lynn A. Stang, Senior Director, Regulatory & Government Affairs, Assistant General Counsel, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket Nos. 10-255 and 11-153 (filed Feb. 6, 2012) at 17 (Intrado Feb. 7, 2012 *Ex Parte*). Intrado presents three cost estimates to deploy text-to-911: nationwide by all carriers to all PSAPs; in 18 states by all carriers to one PSAP each; all carriers to one PSAP per state. Under each model, the carriers’ total five year cost does not vary. Intrado’s estimates are based on deployment of a direct SMS-to-911 capability, including modifications to carriers’ short message service centers, location acquisition, session management, and functional responsibilities associated with message routing to the correct PSAP. The cost model does not include costs associated with IP connectivity expense, support for display of texts on existing TTY equipment, or use of existing voice relay solutions to convey text message to a PSAP. Intrado Notice Comments at 14-15. See also Letter from Greg Rogers, Deputy General Counsel, Bandwidth, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket Nos. 10-255 and 11-153 (filed June 18, 2012), Att. at 3 (noting a “Total 3 year budgetary price between \$4.5 [million] and \$12.0 [million]”); *Further Notice*, 27 FCC Rcd at 15686 at ¶ 66.

⁷⁰ As discussed above, we estimate the benefits floor for the first year of implementation of text-to-911 is \$63.7 million.

⁷¹ *Second Further Notice*, 29 FCC Rcd at 1552 ¶ 19.

⁷² *Id.* (“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.”).

⁷³ Comments of TCS, PS Docket Nos. 10-255 and 11-153 (filed April 4, 2014) at 4 (TCS Second Further Notice Comments).

⁷⁴ Comments of NTCA, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 1 (NTCA Second Further Notice Comments).

⁷⁵ NTCA Second Further Notice Comments at 2-3.

equipment upgrades, a stiff price if the PSAP is not yet ready to offer the service to the public.”⁷⁶ NTCA contends that the costs to PSAPs to become text-ready “are apt to be great,” but does not provide specific dollar amounts.⁷⁷

26. We recognize that small and rural CMRS providers may face a comparatively larger financial burden in complying with our text-to-911 requirements than larger CMRS providers, and would prefer not to make the investment necessary for providing text-to-911 service until PSAPs have declared that they are ready for it. As noted below, however, we believe that the deadline we adopt in this *Second Report and Order* will encourage PSAPs to commit the necessary system upgrades necessary to make text-to-911 available more promptly. We also find that these costs are justified in light of the significant benefits. We expect, however, that once the initial implementation costs have been incurred to implement the system, CMRS providers’ recurring costs of carrying text-to-911 traffic will be negligible, because it is a relatively small part of the network and will place only negligible demands on network capacity that is designed to handle larger volumes of voice and data services. Moreover, given the magnitude of public benefits at stake compared to the costs, we believe that the minimal cost burden for small and rural CMRS providers to implement text-to-911 is justified.

(ii) Interconnected Text Providers

27. In the *Second Further Notice*, we provided our own estimates and sought comment on the associated costs for implementing each of the four delivery models for interconnected text providers and any other potential initial or ongoing costs of implementation.⁷⁸ In response, several commenters provided dollar estimates for the anticipated costs of implementation of text-to-911 by interconnected text providers that were relatively consistent with our estimates. For example, VON Coalition states that “[t]he costs of designing, implementing and validating [software] updates” that would be used with the CMRS network-based solution “would likely be in the range of thousands or tens of thousands of dollars per i-text application.”⁷⁹ Heywire states that while the costs of implementation are indeterminate at this point, it estimates the cost of the CMRS network-based model at “approximately US \$5,000 per mobile client (e.g. – Apple iOS, Google Android, Microsoft WinPhone, etc.), including any variations of [operating system (OS)] from the common base for mobile hardware extensions, with ongoing maintenance costs that is variable dependent upon any changes in subsequent future evolutions of the mobile OS and associated API to adapt to such.”⁸⁰ Motorola Mobility notes that “[f]rom the perspective of the device manufacturer, there is little to no additional cost to supporting interconnected OTT originating text-to-911 once a sufficiently capable API is deployed.”⁸¹ Heywire also notes that spam and denial of service (DoS) attacks may also affect costs to interconnected text providers.⁸²

⁷⁶ *Id.* at 3.

⁷⁷ *Id.* at 5, citing Comments of Blooston Rural Carriers, PS Docket Nos. 10-255 and 11-153 (filed Jan. 29, 2013), at 2 (Blooston Rural Carriers Further Notice Comments).

⁷⁸ *Second Further Notice*, 29 FCC Rcd at 1557 ¶ 35. With respect to the delivery model premised on a texting application’s use of a mobile device’s native SMS application programming interface (SMS API), we estimated that a text-to-911 requirement would impose an implementation cost of approximately \$4,500 per provider per platform, for an industry-wide cost of approximately \$555,000. *Id.* We arrived at this estimate 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. *Id.*

⁷⁹ Comments of VON Coalition, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 5 (VON Coalition Second Further Notice Comments).

⁸⁰ Heywire Second Further Notice Comments at 4-5.

⁸¹ Comments of Motorola Mobility, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 3-4 (Motorola Mobility Second Further Notice Comments).

⁸² Heywire Second Further Notice Comments at 6.

28. On the other hand, Information Technology Industry Council (ITIC) argues that “the FNPRM significantly underestimates these compliance costs.”⁸³ ITIC does not provide actual cost estimates, noting that these are proprietary. However, it states that “the average price quotes from third party technology providers have been approximately \$.50 to \$1/user/year – which must be multiplied by potentially millions of individuals using a texting application.”⁸⁴ textPlus agrees with ITIC’s estimate, and further argues that “[t]ypically, the provider of a communications platform would simply pass on these additional costs to its customers. However, the vast number of textPlus users choose the service because it is offered as a free download. If textPlus was required to charge even \$1 to download the textPlus app ... textPlus anticipates that its users would choose or simply migrate to other free, non-interconnected OTT text messaging providers or messaging apps that offer a more limited functionality...”⁸⁵ CenturyLink, which plans to become an interconnected text provider, makes a similar argument that “there is no certainty that the cost of creating the ability to do even a rudimentary text-to-911 capability could be absorbed in the product price and still be a VoIP offering attractive to our customers.”⁸⁶

29. While we recognize that the text-to-911 requirements we adopt today will impose costs on interconnected text providers, we believe those costs are reasonable, particularly in light of the significant public safety benefits of providing text-to-911 service. We find that our proposed cost estimates for implementation of text-to-911 by interconnected text providers are supported by the record. To the extent parties such as ITIC and textPlus disagree, they have failed to support their claims with any documented evidence.⁸⁷ For example, ITIC does not reveal how comprehensive the price disclosures were, or who provided the estimates, or how they would scale over such a large volume of users. As such, we are unpersuaded by ITIC’s unsubstantiated and vague estimates. Finally, neither ITIC nor textPlus explain why our methodology is unreasonable.⁸⁸ Ultimately, we realize that imposing text-to-911 requirements is not without a cost to these providers. At the same time, however, we find that these costs are justified and reasonable in light of the fundamental public interest benefits to be gained, the need to provision text-to-911 service to ensure that all Americans have access to emergency services, and the increasing reliance on OTT text applications.

30. We also emphasize that costs likely will vary based on the particular text-to-911 solution an interconnected text provider chooses to implement. Because text traffic in the CMRS network-based delivery model would be routed over CMRS networks, there should be little cost to interconnected text

⁸³ Comments of Information Technology Industry Council, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 5 (ITIC Second Further Notice Comments).

⁸⁴ ITIC Second Further Notice Comments at 5.

⁸⁵ Reply Comments of textPlus, Inc., PS Docket Nos. 10-255 and 11-153 (filed May 5, 2014) at 6 (textPlus Second Further Notice Reply Comments). “Over-the-top” (OTT) 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. OTT 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. OTT texting applications may be provided by the underlying mobile CMRS provider or a non-affiliated third-party, and may be “interconnected” or “non-interconnected.” See *Second Further Notice*, 29 FCC Rcd at 1549 ¶ 6 n. 14; *Bounce-Back Order*, 28 FCC Rcd 7556.

⁸⁶ Comments of CenturyLink, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 4 (CenturyLink Second Further Notice Comments).

⁸⁷ See *supra* notes 84-85.

⁸⁸ Similarly, CenturyLink concedes that it has obtained no cost information, that it cannot reasonably predict those costs, and that it is not in a position to address the relevance or accuracy of the Commission’s cost estimate. CenturyLink Second Further Notice Comments at 4 & n.9.

providers to support text-to-911. However, as discussed further below, we believe that the question of reasonable compensation may be resolved through direct billing of the underlying user through his or her SMS plan, or through business arrangements between interconnected text providers and CMRS providers.⁸⁹ We remind CMRS providers of our fundamental view that text-to-911 will provide significant benefits to all consumers.

31. Finally, we agree with parties who argue that supporting text-to-911 must be factored into the general cost of doing business and that “the provision of emergency services to their customers is not an optional feature, it is necessary infrastructure.”⁹⁰ Accordingly, we find that the costs of implementation by interconnected text providers are outweighed by the public interest benefits in ensuring that Americans have access to emergency services through interconnected text messaging.

(iii) PSAPs

32. Based on the record in this proceeding, the success of various text-to-911 trials, and the recent modest increase in PSAP adoption,⁹¹ we find that our text-to-911 rules will not impose an undue burden on PSAP operations. First, PSAPs retain discretion as to whether it will accept text messages. We strongly encourage PSAPs to implement text-to-911 in their jurisdictions and expect that consumer demand and considerations of public safety will drive this investment.⁹² Investments made now by PSAPs and covered text providers to support text-to-911 can also be leveraged to support future NG911 deployments and, accordingly, serve as building blocks towards an IP-based emergency network. Second, PSAPs have several options for the receipt of text messages, including options that will impose minimal costs on the PSAP.⁹³ For example, while some PSAPs may choose to implement text-to-911 using existing equipment, such as existing NG911 customer-premises equipment (CPE), web browsers, or TTY terminals, other PSAPs may choose to upgrade their equipment to receive text messages in a manner that will also support additional data once in an NG911 environment. Third, PSAPs that have already implemented text-to-911 or participated in text trials have provided anecdotal evidence that texts to 911 will not likely overwhelm any PSAP and that text-to-911 service saves lives.⁹⁴

⁸⁹ Comments of Verizon and Verizon Wireless, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 9-10 (Verizon Second Further Notice Comments) (stating that the Commission has long since allowed for Verizon’s established relationships with third party vendors like Intrado and TCS to be governed by unregulated commercial negotiations and contractual relationships, which has resulted in the efficient deployment of wireless E911 Phase I and Phase II service nationwide, and there is no basis for the Commission to conclude that a similar framework will not work for interconnected text providers in this context).

⁹⁰ Comments of NASNA, PS Docket Nos. 10-255 and 11-153 (filed Apr. 2, 2014), at 3 (NASNA Second Further Notice Comments).

⁹¹ The signatory parties to the Carrier-NENA-APCO Agreement have been text-to-911 capable since at least May 15, 2014. There are currently 121 PSAPs that are “text ready,” 48 of which have implemented text-to-911 on or after May 15, 2014. For information on current text-to-911 deployments, *see* http://transition.fcc.gov/pshs/911/Text_911_Deployments.pdf (last accessed August 7, 2014).

⁹² We note that, with respect to the provision of disability accessible emergency services, PSAPs are under the purview of the U.S. Department of Justice, in accordance with directives in Title II of the Americans with Disabilities Act of 1990.

⁹³ *See* BRETSA Second Further Notice Reply Comments at 8-9 (“The availability of the TDD and browser solutions for text-to-911 at little or no cost to the PSAP . . . means that there are no or very low barriers to implementation [to PSAPs of text-to-911].”); Bandwidth Second Further Notice Comments at 2 (“Leveraging non-discriminatory access to collective industry investments in network solutions can dramatically lower the implementation costs for interconnected OTT providers so that concerns about costs should not be a long-term impediment[.]”).

⁹⁴ *See, e.g.*, Letter from David Tucker, Executive Director, Vermont E911 Board, to Marlene H. Dortch, Secretary, Federal Communications Commission (filed Nov. 13, 2013) (Vermont Nov. 13, 2013 *Ex Parte*); Comments of Black Hawk County, PS Docket Nos. 10-255 and 11-153 (filed Feb. 2, 2012) at 2-4; Letter from James T. Soukup, Emergency Communications Director, City of Durham, to Marlene H. Dortch, Secretary, Federal Communications

(continued....)

c. Cost-Benefit Conclusion

33. As we note above, we conclude that the benefits floor for the first year of text-to-911 is \$63.7 million. Balanced against the cost estimates in the record, the implementation of text-to-911 will provide substantial benefits both for people with disabilities and the general public in a variety of scenarios. In addition to the life-saving benefits discussed above, implementing text-to-911 could yield other benefits, such as reduced property losses and increased probability of apprehending criminal suspects.⁹⁵ We note that text-to-911 is not a market-driven service. However, we find that there is demand for the service from deaf, hard of hearing, and speech-disabled individuals, and to date, the marketplace has not responded to this demand. Accordingly, we find that adopting text-to-911 requirements for covered text providers is justified given this cost-benefit analysis.

2. Delivery of Text-to-911 by all Covered Text Providers

34. We adopt a two-step obligation for covered text providers to implement text-to-911. All covered text providers must be capable of supporting text-to-911, independent of whether they have received a PSAP request, by December 31, 2014. Then, covered text providers would have six months from the date that an individual PSAP provides notice that it is “text-ready” to undertake necessary network and protocol configuration to deliver texts to an individual PSAP.

a. Scope

35. As in the *Bounce-Back Order*, we define “covered text providers” to include all CMRS providers, as well as all providers of interconnected text messaging services that enable consumers to send text messages to and receive text messages from all or substantially all text-capable U.S. telephone numbers, including through the use of applications downloaded or otherwise installed on mobile phones.⁹⁶

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Commission (filed June 2, 2012) at 1-2; Letter from James T. Soukup, Emergency Communications Director, City of Durham, to Marlene H. Dortch, Secretary, Federal Communications Commission (filed Nov. 6, 2012) at 1-2.

⁹⁵ For example, property losses may be reduced if text-to-911 is used to promptly inform authorities of a fire, thereby enabling the fire department to reach the emergency sooner. Indeed, if individuals who are deaf, hard of hearing, or speech disabled have direct access to 911, they may be more likely to report emergencies as they happen. Prior to the implementation of text-to-911, such individuals may be disinclined to use TTY equipment or may be unable to use it while outside the home and lack access to reach 911 altogether. Implementing text-to-911 unlocks the potential for this community to more actively participate in reporting emergencies.

⁹⁶ See 47 C.F.R. § 20.18(n)(1); see also *Bounce-Back Order*, 28 FCC Rcd at 7606. We exclude text messaging services that use U.S. telephone numbers for administrative or identification purposes only, but that are not interconnected. See VON Coalition Second Further Notice Comments at 3. We also exclude relay service providers, mobile satellite service (MSS), and in-flight text messaging services from the scope of our requirements at this time. Sprint, a major IP relay provider, states that “relay services are not delivered via SMS and should remain separate until a more robust, reliable text-to-911 messaging service becomes available” Comments of Sprint Corporation, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 8-9 (Sprint Second Further Notice Comments). Likewise, disability groups oppose incorporating relay services into a text-to-911 mandate. See, e.g., Reply Comments of Rehabilitation Engineering Research Center on Telecommunications Access, PS Docket Nos. 10-255 and 11-153 (filed May 5, 2014), at 7-8 (RERC-TA Second Further Notice Reply Comments); Reply Comments of Wireless Rehabilitation Engineering Research Center, PS Docket Nos. 10-255 and 11-153 (filed May 5, 2014), at 3-4 (Wireless RERC Second Further Notice Reply Comments). We also agree that airborne text-to-911 communications presents particular challenges, due to the unique nature of in-flight service, and that MSS is a specialized offering with a focus on enterprise and government users. We therefore exclude these services from the scope of our text-to-911 requirements. See Comments of Gogo, Inc., PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 2-6; Reply Comments of Inmarsat, PS Docket Nos. 10-255 and 11-153 (filed May 5, 2014), at 1-3; Reply Comments of Iridium Constellation, LLC, PS Docket Nos. 10-255 and 11-153 (filed May 5, 2014), at 2-5. Finally, we exclude from our requirements at this time 911 text messages that originate from Wi-Fi only locations or that are transmitted from devices that cannot access the CMRS network. See *Second Further Notice*, 29 FCC Rcd at 1553 ¶ 20. We defer consideration of whether to extend text-to-911 requirements to these services until a future time.

We find that imposing the same requirements and deadlines to both CMRS and interconnected text messaging service providers is necessary to serve the public interest.⁹⁷ The scope we adopt today is particularly important given existing and predicted future trends toward greater use of non-CMRS applications for texting,⁹⁸ and in light of our recognition that the transition to NG911 “is still in the early stages.”⁹⁹ Thus, as NENA has noted, the Commission’s proposals “represent the logical next steps aimed at sustaining this momentum and minimizing consumer confusion about the availability and functionality” of text-to-911.¹⁰⁰

36. One of the Commission’s mandates under the Twenty-First Century Communications and Video Accessibility Act of 2010 (CVAA) is to expand access to emergency communications for individuals with disabilities.¹⁰¹ In order for the Commission to achieve this goal, it is necessary to include both CMRS and providers of interconnected text messaging services within the scope of the requirement. Many interconnected text providers offer the same functions as CMRS-provided text messaging; for this reason, individuals with disabilities may opt for such a service in lieu of a CMRS-based text messaging plan or may rarely or never use the built-in CMRS text messaging capability. In such cases, if interconnected text providers are not required to support text-to-911, these individuals may remain unaware of the potential availability of this capability through CMRS providers, or find it difficult to navigate to any such capability during emergency situations where time is critical.

37. Second, imposing the same requirements on both CMRS and interconnected text providers will respond to consumers’ reasonable expectations and reduce consumer confusion. In response to the *Second Further Notice*, AT&T states that “the exclusion of OTT texting services would deprive a large number of texters without a Text-to-911 solution, because as the Commission itself notes such ‘applications are growing increasingly popular and have already eclipsed [SMS] text messages provided by wireless carriers in terms of volume.’”¹⁰² TCS notes that “a consumer does not usually think about scenarios involving the need to access emergency services when focusing on communications purchases; but that same consumer has expectations that his communication services will access the public safety infrastructure in those rare cases when such access is critical.”¹⁰³ As noted above,

⁹⁷ While we encouraged parties to come forward and voluntarily commit to providing text-to-911 in our *Policy Statement* in January 2014, thereby foregoing the need to adopt a regulatory mandate, no new voluntary agreements or commitments to provide text-to-911 among CMRS providers or interconnected text providers have materialized. We therefore believe it is both appropriate and necessary to take regulatory action at this time.

⁹⁸ See *Further Notice*, 27 FCC Rcd at 15692-95 ¶¶ 82-89. See *infra* note 102. As the Commission has noted, mobile data traffic (which excludes SMS-based texts) has been growing significantly. *Sixteenth Annual Competition Report*, 28 FCC Rcd at 3871 ¶ 263 & table 36.

⁹⁹ 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 accessed Aug. 11, 2014).

¹⁰⁰ Comments of NENA, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 1-2 (NENA Second Further Notice Comments). See also Reply Comments of NENA, PS Docket Nos. 10-255 and 11-153 (filed June 5, 2014), at 2 (NENA Second Further Notice Reply Comments) (reiterating NENA’s support for the text-to-911 Policy Statement adopted by the Commission earlier this year, while also viewing text-to-911 as “a temporary, interim solution, prior to the availability of NG9-1-1 compatible text messaging services”).

¹⁰¹ The CVAA amended the Telecommunications Act of 1934, stating that the Commission shall “promulgate such regulations as are necessary to implement this section,” including “performance objectives to ensure the accessibility, usability, and compatibility of advanced communications services and the equipment used for advanced communications services by individuals with disabilities....” See Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. 111-260, Oct. 8, 2010, 124 Stat. 2751 (CVAA).

¹⁰² Comments of AT&T Mobility, Inc., PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 2 (AT&T Second Further Notice Comments), citing *Second Further Notice*, 29 FCC Rcd at 1548 ¶ 6.

¹⁰³ TCS Second Further Notice Comments at 20.

consumers may incorrectly assume that unavailability of text-to-911 through OTT texting services upon which they rely would be replicated on the CMRS native text platform, or face critical delays in determining how to migrate to that platform in an emergency.

b. Technical Feasibility and the “Text-Capable” Deadline

38. We find that it is technically feasible for all covered text providers to be capable of supporting text-to-911. Given that all covered text providers have at least one technically feasible and achievable path to implementation,¹⁰⁴ as discussed below, we establish a single, uniform deadline of December 31, 2014 for all covered text providers to be “text-capable.” We believe that this deadline achieves our goal of ensuring that text-to-911 is implemented as swiftly as feasibly possible. We also believe there are benefits to adopting a uniform deadline for all covered text providers. By this “text-capable” deadline, a covered text provider should have made any preparations necessary to provide text-to-911, including, for example: (1) determining the particular solution it will use for delivering texts to 911, including the capability to obtain location information sufficient to route texts to 911 to the appropriate PSAP; (2) identifying and/or entering into any necessary contractual arrangements with other stakeholders to implement text-to-911, including, but not limited to, arrangements for routing interconnected text-to-911 traffic; and (3) adopting requisite budgetary and other resource allocation plans to provide for delivery of text-to-911 in accordance with our requirements.¹⁰⁵

39. Based on the record, adoption of the ATIS/TIA J-STD-110 standard,¹⁰⁶ and existing text-to-911 deployments by AT&T, Sprint, T-Mobile, and Verizon Wireless, it is clear that it is technically feasible for CMRS providers to support text-to-911. In the *Second Further Notice*, we proposed to require all covered text providers be capable of supporting text-to-911 service by December 31, 2014.¹⁰⁷ In response, a number of public safety and technology vendors express support for this proposed deadline with regard to CMRS providers.¹⁰⁸ For example, NENA states that “[t]here is little doubt, based on the record, that a December 31st, 2014 deadline for text readiness is reasonable and feasible for the overwhelming majority of CMRS providers.”¹⁰⁹ NENA also notes that “the two principal preconditions to the technical feasibility of Text-to-911 deployment by small or rural carriers cited by previous commenters have now been satisfied: ATIS and TIA published their JSMS911 standard (J-STD-110) just over one year ago, and multiple competing text solution providers have now turned-up service to multiple PSAPs using multiple text delivery methods.”¹¹⁰ APCO also states, “it appears that other [CMRS]

¹⁰⁴ These requirements are “achievable and technically feasible,” pursuant to our authority under CVAA. *See* 47 U.S.C. § 615c(g). This source of authority is discussed *infra* at Section III.F.

¹⁰⁵ While we do not require each of these steps nor intend for this list to be exhaustive, a covered text provider that has completed each of these steps will be considered text-capable under our rules. We further note that satisfying this text-capable requirement does not necessarily entail the expenditure of funds, provided the covered text provider takes all necessary steps to be able to provide text-to-911 within six months of receiving a PSAP request. Whether the expenditure of funds is necessary to comply with our requirements is a business and operational decision that may vary by individual covered text provider.

¹⁰⁶ The scope of the J-STD-110 is limited to text messaging to 9-1-1 for native SMS capabilities, and it does not address support of text-to-911 for interconnected text services using “over-the-top” SMS. *See* ATIS/TIA J-STD-110, Section 1.1.

¹⁰⁷ *Second Further Notice*, 29 FCC Rcd at 1552 ¶ 18.

¹⁰⁸ Comments of APCO, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 2 (APCO Second Further Notice Comments); NENA Second Further Notice Comments at 4; NASNA Second Further Notice Comments at 2; Vermont E911 Second Further Notice Comments at 1; NTCA Second Further Notice Comments at 1-2; T-Mobile Second Further Notice Comments at 2; Heywire Second Further Notice Comments at 1; TCS Second Further Notice Comments at 3.

¹⁰⁹ NENA Second Further Notice Reply Comments at 3.

¹¹⁰ NENA Second Further Notice Comments at 4 (footnote omitted).

carriers would be able to follow in [the four major carrier parties of the Carrier-NENA-APCO Agreement's] footsteps and comply by the end of this year. There are already Text Control Center (TCC) providers working with the four major carriers.... Thus, the road is paved for easier implementation by small and rural carriers."¹¹¹

40. We are unpersuaded by arguments by some small and rural CMRS providers that, absent a PSAP request for service, covered text providers should not be required to develop text-to-911 capability. As noted above, CCA supported the December 31, 2014 deadline over a year ago. CCA does not challenge the feasibility of meeting that deadline, but argues that such a deadline is not likely to help the Commission achieve its goal because "PSAPs are the gatekeepers for this service, and until the Commission finds a way to increase PSAP adoption, the deadline imposed on carriers will not further the Commission's objectives."¹¹² We agree that the Commission needs to encourage PSAP adoption, but we believe that establishing a set deadline is the best means by which to do so. As APCO argues, absent a date certain by which covered text providers will make text-to-911 available, PSAPs will not have any incentive to commit to necessary system upgrades for text-to-911.¹¹³ We believe that the "text-capable" deadline we adopt today will serve to encourage PSAPs to plan for and request text-to-911 service. Furthermore, the implementation of text-to-911 is already underway. As of July 28, 2014, the service is supported statewide in Vermont and Maine, as well as in a number of jurisdictions across the nation, including jurisdictions in Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Maryland, Montana, New York, North Carolina, Pennsylvania, South Carolina, Texas, and Virginia.¹¹⁴ A number of jurisdictions, including jurisdictions in California, Idaho, Louisiana, Massachusetts, Rhode Island, Tennessee, Washington, and West Virginia, have already indicated that they plan to implement the capability later this year or in 2015.¹¹⁵ We believe that the success of these early adopters will also be persuasive to other PSAPs,¹¹⁶ and we plan to continue to work cooperatively with PSAPs to facilitate their notification to covered text providers of requests to initiate service and otherwise to promote their deployments. We recognize that there may be a number of factors that PSAPs must address before implementing text-to-911 and that might result in a later deployment timeframe, including funding or other resource issues, determining how best to integrate their chosen delivery method (TTY, web browser, or i3 ESinet/IP interface) with their existing PSAP infrastructure, or assessing how to incorporate text-to-911 as part of a larger migration to NG911. We are encouraged, however, by the number of jurisdictions that have

¹¹¹ APCO Second Further Notice Comments at 2.

¹¹² Reply Comments of Competitive Carriers Association, PS Docket Nos. 10-255 and 11-153 (filed June 5, 2014) at 2-4 (CCA Second Further Notice Reply Comments).

¹¹³ APCO Second Further Notice Comments at 5.

¹¹⁴ See http://transition.fcc.gov/pshs/911/Text_911_Deployments.pdf (last accessed July 28, 2014) (identifying status of PSAP deployments nationwide).

¹¹⁵ See, e.g., Text-To-911 Services Raise Compatibility Issues In Sacramento County, CBS13, available at <http://sacramento.cbslocal.com/2014/05/06/text-to-911-services-raise-compatibility-issues-in-sacramento-county/> (last accessed Aug. 1, 2014); John Funk, Idaho Emergency Dispatchers Prepare for Next Generation 911, Idaho Press-Tribune, July 6, 2014, available at http://www.idahopress.com/members/idaho-emergency-dispatchers-prepare-for-next-generation/article_594a91c6-04c4-11e4-a677-001a4bcf887a.html (last accessed Aug. 1, 2014); Harrison County Updating 911 Equipment, WTOV9.com, July 16, 2014, available at <http://wto9.com/news/features/top-stories/harrison-county-updating-911-equipment-5039.shtml> (last accessed Aug. 1, 2014); Robert Sorrell, Sullivan County Implementing Future in Emergency Communications, Bristol Herald Courier, July 28, 2014, available at http://www.tricities.com/news/article_bf48a466-1605-11e4-ab80-001a4bcf6878.html (last accessed Aug. 1, 2014).

¹¹⁶ See Letter from David Tucker, Executive Director, Vermont State E9-1-1 Board, to Marlene H. Dortch, Secretary, Federal Communications Commission, PS Docket No. 11-153 (filed June 19, 2014), at 3 ("If we had [text-to-911] to do all over again, we would do it again. The concern about folks replacing voice calls with text has proven to be a non-issue. We have had a handful of unnecessary texting, and almost no incidents of spamming.").

already deployed or have indicated their intent to deploy text-to-911 that PSAPs will implement text-to-911 swiftly.

41. We are also unpersuaded by other arguments in the record that we should adopt a different deadline. For example, CCA suggests that “the Commission should benchmark smaller wireless providers’ implementation deadline from adoption of a final order, rather than the predetermined December 31, 2014 date.”¹¹⁷ Adopting a December 31, 2014 deadline, consistent with our proposal in the *Second Further Notice*, is based on our evaluation of the comments in the record, as well as the demonstrated ability of CMRS providers to deliver texts to 911, given text-to-911 deployments already in existence. And small and rural CMRS providers should be able to leverage some of the text-to-911 databases and other infrastructure that text-to-911 vendors have had in place since May 15, 2014 to support provision of text-to-911 by AT&T, Sprint, T-Mobile, and Verizon Wireless.¹¹⁸ We therefore believe that a December 31, 2014 text-capable deadline should be achievable and technically feasible.

42. The record also demonstrates that there is at least one technically feasible approach that exists today for interconnected text providers to support text-to-911 by December 31, 2014, with additional solutions under development. In the *Second Further Notice*, we sought comment on the technical feasibility of interconnected text providers to support text-to-911 traffic under four different delivery models: a CMRS network-based model,¹¹⁹ a server-based model,¹²⁰ a server-based model relying on a device’s phone number,¹²¹ and a server-based model relying on a location API.¹²² The record shows that interconnected text providers could feasibly implement at least one proposed text-to-911 delivery model – the CMRS network-based model – by December 31, 2014.¹²³ For example, Heywire submits that

¹¹⁷ CCA Second Further Notice Reply Comments at 4.

¹¹⁸ See Bandwidth Second Further Notice Comments at 7. For example, most small and rural CMRS providers will contract with a third-party vendor for access to Text Control Centers (TCCs), which serve as aggregation points for both text and voice calls to PSAPs. See NTCA Second Further Notice Comments at 6. Seeing as the four major CMRS providers and their technology vendors have already installed TCCs for compliance with the Carrier-NENA-APCO Agreement, small and rural CMRS providers will only need to connect to the TCC to commence text-to-911 service. Thus, because small and rural CMRS providers will likely opt to use TCCs already in place and therefore will not need to purchase and deploy infrastructure, their implementation of text-to-911 should not be delayed for such reasons.

¹¹⁹ *Second Further Notice*, 29 FCC Rcd at 1554-55 ¶¶ 25-29. The “CMRS network-based model” is premised upon a texting application’s use of the wireless device’s native SMS application programming interface (API) after recognizing that the user is sending a text message to the text short code “911.” 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 CMRS provider, *i.e.*, the text will be routed through the CMRS provider’s (or its agent’s) TCC, which is the functional element of the Short Message Service Center (SMSC) dedicated to routing texts to the appropriate PSAP.

¹²⁰ *Second Further Notice*, 29 FCC Rcd at 1556 ¶ 31.

¹²¹ *Id.* at 1556 ¶ 32.

¹²² *Id.* at 1556 ¶ 33. We noted that these models were not intended to be an exhaustive list of methods available to interconnected text providers to route texts to PSAPs, and that an application could feasibly implement both CMRS network-based and server-based solutions. *Id.*

¹²³ See, *e.g.*, APCO Second Further Notice Comments at 3 (“[W]e urge that the selected approach be technically viable and relatively easy to implement by December 31, 2014, or as soon as possible thereafter. The CMRS network-based model would appear to meet those criteria, though some technical issues may still need to be considered.”); Comments of Comcast Corporation, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 2 (Comcast Second Further Notice Comments) (“If the Commission requires OTT text messaging providers to implement a text-to-911 solution by the December 31, 2014 deadline ... one model – the CMRS network-based model – potentially may be technically feasible for Comcast to install by that date.”); TCS Second Further Notice

(continued....)

the target date of December 31, 2014 proposed by the Commission is feasible using the CMRS network-based model.¹²⁴ Microsoft asserts that “as long as access to the SMS API remains available to interconnected text apps, enabling text-to-911 by December 31, 2014, is technically possible.”¹²⁵ Finally, VON Coalition states that “[t]he SMS-API model is technically feasible, and can likely be implemented by i-text providers by the December 31, 2014, deadline suggested by the Commission.”¹²⁶

43. In light of the fact that multiple interconnected text providers filed comments in the record indicating that a December 31, 2014 deadline is technically feasible, we are unpersuaded by other parties who suggest interconnected text providers will need additional time,¹²⁷ or that adopting a deadline for interconnected text providers would be inappropriate at this time.¹²⁸ We also disagree that certain technical issues justify a later deadline for interconnected text providers.¹²⁹ Based on consideration of the record as a whole, we believe a December 31, 2014 deadline is reasonable.

44. In light of our commitment to technologically neutral rules, as we emphasized in the *Policy Statement*,¹³⁰ we do not mandate any particular model for implementing text-to-911. Because SMS is the most common texting technology in use today, and virtually all wireless consumers already have

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Comments at 5 (“It is technically feasible for interconnected text providers to implement these [OTT Text-to-911 Message Delivery] models by the proposed deadline.”).

¹²⁴ Heywire Second Further Notice Comments at 2. Heywire also states that the CMRS network-based model “not only guarantees near 100% universal implementation potential by all OTT service providers. . . but also gives the individual using text-to-911 functionality a consistent [and] familiar user experience with the various messaging applications while simultaneously providing the 911 ecosystem a singular consistent systems for processing off the requests (PSAP, TCC, etc.)” *See id.*

¹²⁵ Comments of Microsoft Corporation, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 5 (Microsoft Second Further Notice Comments).

¹²⁶ VON Coalition Second Further Notice Comments at 4-5.

¹²⁷ CenturyLink says only that it “is not certain” that the proposed deadline is achievable “for all text providers,” and asks either for a later deadline or that the Commission remain “open to waiver requests.” CenturyLink Second Further Notice Comments at 2. Sprint similarly asks that the Commission “consider an alternative timeframe” for interconnected text providers because of “the complexities involved” in coordination among multiple entities, but provides no further showing in support of its request. Sprint Second Further Notice Comments at 2. *See also* RWA Second Further Notice Comments at 2-3. Twilio’s argument about possible lack of access to SMS API capabilities is inconsistent with the statements already made by Sprint and T-Mobile. Twilio Second Further Notice Comments at 9-10; Sprint Second Further Notice Comments at 7; T-Mobile Second Further Notice Reply Comments at 13-14.

¹²⁸ Comcast, for example, urges that it would be “prudent” to refrain from establishing a deadline for interconnected text providers, but the basis for this position is various technical impediments limited to the non-CMRS-based network models. *See* Comcast Second Further Notice Comments at 3. Microsoft similarly urges “caution,” but also refers to its suggestion not to set dates for non-interconnected texting apps. Reply Comments of Microsoft Corporation, PS Docket Nos. 10-255 and 11-153 (filed May 5, 2014), at 13 (Microsoft Second Further Notice Reply Comments).

¹²⁹ For example, Comcast argues that the CMRS network-based model would require users attempting to send a 911 text message using an interconnected text application on an iOS device to press “send” twice in order to successfully transmit the message, and that additional time is warranted to address this issue. *See* Comcast Second Further Notice Comments at 5-6. We acknowledge that the application’s user interface for 911 text messages may differ from that used for non-emergency texting purposes and that such differences are permissible, provided they do not affect the covered text provider’s ability to comply with the text-to-911 requirements as set forth herein. We also note that this issue is limited to devices using Apple’s iOS operating system. *See id.* at 6, n. 13. We are unpersuaded that the consumer’s need to press “send” twice justifies a longer deployment timeframe. Comcast presents no evidence that consumers would abandon their attempts to text 911 in the face of seeing a second “send” prompt, or that this issue could not be fixed through modification to the underlying code of its application.

¹³⁰ *Policy Statement*, 29 FCC Rcd 1552 at ¶ 15.

access to it and are familiar with its use, we expect that most CMRS providers will initially support SMS-based text-to-911.¹³¹ However, we acknowledge that CMRS providers may eventually seek to migrate customers away from SMS. We do not require CMRS providers to support SMS-based text-to-911 indefinitely, so long as they provide their customers with at least one text-to-911 option per device that works across the provider's entire network coverage area.¹³² CMRS providers may select any reliable method or methods (*e.g.*, SMS, IP-based) for text routing and delivery.¹³³ Although covered text providers may utilize a messaging platform that can support multiple addresses or enable sending images and video, covered text providers must ensure that these features do not interfere with the delivery of the text portion of the message to a PSAP.¹³⁴

45. With respect to interconnected text providers, we anticipate that many will choose the CMRS network-based solution to deliver texts-to-911, at least as an interim measure. We expect CMRS providers will continue to allow access to capabilities necessary for transmission of text-to-911 communications by other covered text providers.¹³⁵ In order to facilitate the use of this method, CMRS

¹³¹ The four major wireless carriers have all implemented SMS-based text-to-911 solutions.

¹³² T-Mobile notes its plan to migrate former MetroPCS subscribers from their legacy CDMA network to its HSPA and LTE networks. It argues that "the Commission should exempt networks that will be decommissioned within eighteen months of the effective date of the new mandate ... To do otherwise would mandate wasteful investment in a capability that will be soon discarded along with the rest of that network." T-Mobile Further Notice Comments at 10-11. We agree and, accordingly, will exempt networks that will be decommissioned before June 30, 2016, on the condition that subscribers are migrated by that date to networks with the required text-to-911 capability.

¹³³ We expect parties will take other necessary measures to facilitate text-to-911, such as ensuring the interconnection of various TCCs. T-Mobile argues that "it is critical that these TCCs interconnect: 'When TCCs from different vendors are able to interoperate with each other, PSAPs can connect to multiple carriers through a single TCC.' The same is true in reverse: when TCCs from different vendors interconnect, a CMRS provider can reach multiple vendors' PSAPs through a single TCC. TCC interconnectivity is therefore part of the revised ATIS standard for text-to-911. Without interconnection between TCCs, T-Mobile will not be able to reach a substantial number of requesting PSAPs." See T-Mobile March 18, 2014 *Ex Parte* at 2, citing Ad Hoc National SMS Text-to-911 Service Coordination Group, "Interim SMS Text-to-911 Information and Planning Guide, Version 1" (Feb. 2014), available at http://c.ymcdn.com/sites/www.nena.org/resource/resmgr/Docs/SMS_Text_Info_and_Planning.pdf (last accessed June 20, 2014) and ATIS, Supplement A to J-STD-110, Joint ATIS/TIA Native SMS to 9-1-1 Requirements and Architecture Specification, J-STD-110.a (Nov. 2013). See also NTCA Second Further Notice Comments at 7 (citing revised ATIS standard). We note that interconnection between TCCs was not required in the Carrier-NENA-APCO Agreement, and no party has presented evidence of any difficulties with TCC interconnection that have prevented any of the signatory parties from meeting the terms of the agreement or are likely to prevent any other covered text provider from implementing text-to-911. As T-Mobile notes, TCC interconnection is addressed in the revised J-STD-110.a. We will continue to monitor the progress of text-to-911 implementation, including the status of interconnection between TCCs and whether additional action may be necessary.

¹³⁴ For example, a consumer may send a text message to 911 and include other telephone numbers in the address field in addition to the short code "911." The covered text provider must ensure that processing of the text for delivery to the non-911 addresses does not affect the delivery of the text to the PSAP and any subsequent two-way text exchange between the texter and the PSAP. Likewise, if a consumer attaches multimedia to a text message to 911, the covered text provider must ensure delivery of the text portion of the message without interference or alteration of the text and subject to the requirements for text delivery set forth by the PSAP. See also *infra* Section IV.D, para. 131 (seeking comment on rich media text services, which may be able to support the future delivery of additional non-text information).

¹³⁵ Many text applications already employ a delivery model similar to the CMRS network-based delivery model. See, *e.g.*, Microsoft Comments at 5 ("Today, major mobile operating systems provide some API or other coding capability that would allow an interconnected texting app to access SMS functionality native to the phone and send a 911 text over the carrier's SMS network."); Heywire Comments at 3 (this exact functional method is already being utilized by many "non" interconnected OTT service providers currently for various other purposes that are not related to 911 type scenarios that are equally complex and challenging for other purposes, that to implement same

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providers shall allow access to capabilities necessary for transmission of text-to-911 communications by other covered text providers.¹³⁶ We incorporate this requirement into our rules.¹³⁷ We make clear, however, that we do not require CMRS providers to reconfigure any SMS text-to-911 platforms in order to facilitate the ability of other covered text providers to access the CMRS providers' networks, and that CMRS providers' obligation to allow access to CMRS networks is limited to the extent that the CMRS providers offers SMS. It is the responsibility of the covered text provider selecting the CMRS network-based solution to ensure that its text messaging service is technically compatible with the CMRS provider's SMS networks and devices, and in conformance with any applicable technical standards.¹³⁸ Further, we find that it is reasonable for CMRS providers to receive commercially reasonable compensation for the delivery of 911 text messages. We do not require CMRS providers to allow text-to-911 traffic over their SMS networks from end users that do not have an SMS plan (an SMS plan may include a bulk messaging plan, a pre-paid messaging plan, or a per-message plan). In this way, CMRS providers may receive commercially reasonable compensation for delivery of texts to 911 directly from

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techniques and mechanisms for Text-to-911 is known and well understood by the industry.”). *See also* Sprint Comments at 7 (“Sprint does not currently block access to the capability if it is already defined in a publicly-available API of the operating system.”); T-Mobile Comments at 11-12 (“Unless there are valid technical or network security concerns, carriers should have no reason to block 911 texts ... when the carrier has permitted a text provider to have access to the carrier's native SMS capability.”); VON Coalition Comments at 5 (For the CMRS network-based model to work, “...wireless carriers cannot block the application's access to the SMS API, which is readily available in mobile operating systems today.”); TCS Comments at 7 (“The interfaces into the carriers' messaging infrastructures are currently open to third parties, and some of these interfaces are currently provided at no additional charge to the interconnecting entity, though the subscriber may be charged for either messaging or data transport.”).

¹³⁶ *See* APCO Second Further Notice Comments at 4, citing *Second Further Notice* at ¶ 29; NASNA Second Further Notice Comments at 4; T-Mobile Second Further Notice Comments at 11; Heywire Second Further Notice Comments at 4; VON Coalition Second Further Notice Comments at 5; Bandwidth Second Further Notice Reply Comments at 6; Microsoft Second Further Notice Reply Comments at 7 (stating that “compliance can be achieved if the carriers simply do not interfere with interconnected OTT app's ability to connect to 911 through the SMS API”).

¹³⁷ Some commenters argue that it is device manufacturers or the device's operating system (OS) – not the CMRS provider – that affects whether a text message originating in a non-native text application will be able to access the CMRS network. *See* Sprint Second Further Notice Comments at 7; Verizon Second Further Notice Comments at 8, 9; Heywire Second Further Notice Comments at 3. This problem appears limited to certain older OS platforms. For example, Android is now on version 4.4 of its OS software. Version 1.6 incorporated an “SMS Manager API” that enables non-native text messaging applications to access the CMRS network. According to Google Play Store's statistics, in August 2013, versions older than Android 2.2 accounted for only about 1 percent of devices that checked in to Google servers, meaning that less than 1 percent of users have devices with versions of Android that would present this problem. *See* <https://developer.android.com/about/dashboards/index.html> (last accessed July 22, 2014). With regard to Apple devices, iOS is now on version 7. iOS version 4 provided an update that allows users to send an SMS within a non-native text application. *See, e.g.,* <http://stackoverflow.com/questions/10848/how-to-programmatically-send-sms-on-the-iphone> (last accessed July 22, 2014). Apple reports that only 2 percent of devices running iOS are using version 5 or earlier, which means that even fewer devices are running versions of iOS that do not incorporate this update. *See* <https://developer.apple.com/support/appstore/> (last accessed July 22, 2014). Because many interconnected text messaging applications are only available for newer versions of the OS, this issue is likely even more limited. For example, interconnected text application Heywire is only available for Android versions 2.1 or higher. *See* <http://www.amazon.com/MediaFriends-Inc-HeyWire/dp/B005VFKHAW> (last accessed July 23, 2014). Thus, because the number of devices using older OS platforms is decreasing over time, and because the relevant applications generally cannot be downloaded onto older OS versions, this should be a diminishing concern. In the event covered text provider cannot deliver texts to 911 for a particular device due to that device's OS, they should seek a waiver of our rules.

¹³⁸ We expect CMRS providers to make any necessary specifications for accessing their SMS networks available to other covered text providers upon request, and to inform such covered text providers in advance of any changes to these specifications.

the end user.¹³⁹ All covered text providers using the CMRS network-based delivery model for text-to-911 must clearly inform consumers that, absent an SMS plan with the consumer's underlying CMRS provider, the covered text provider may be unable to deliver 911 text messages. As noted above, CMRS providers may choose to migrate away from SMS platforms in favor of newer technologies; we therefore limit the scope of this access requirement to the extent that CMRS providers offer SMS.¹⁴⁰ CMRS providers are not subject to any obligation to maintain the SMS network for use by other covered text providers. In this manner, we do not establish "an open-ended obligation to third-party competitors."¹⁴¹ We do, however, require that the CMRS provider must provide reasonable advance notice to the affected covered text providers about its choice to migrate to a new technology not less than 90 days prior to the migration to such technology. We believe this framework will spur innovation from interconnected text providers to actively develop solutions to support text-to-911 without reliance on CMRS providers' underlying networks. We nevertheless encourage parties to negotiate solutions to facilitate continued compliance with our text-to-911 requirements, including solutions whereby CMRS providers would continue to carry other covered text providers' texts to 911 over their new networks where technically feasible, again pursuant to commercially reasonable business arrangements negotiated on an individualized basis.

46. Finally, any covered text provider that is unable to meet the text-capable deadline may seek waiver relief. In the *Second Further Notice*, we sought comment on to what extent, and under what circumstances, the Commission should consider waivers of the proposed text-to-911 rules.¹⁴² We decline to adopt a waiver standard that would be specific to our text-to-911 requirements. The Commission may grant relief pursuant to the waiver standards set forth in Sections 1.3 and 1.925 of its rules,¹⁴³ and we believe these provisions are sufficient to address any requests for relief of the text-to-911 requirements, which we will evaluate based on the facts and circumstances of the particular request.

c. Six-Month Implementation Period to Deliver Texts to Text-Ready PSAPs

47. Subsequent to the "text-capable" deadline, we require covered text providers to commence delivery of texts to 911 within six months of a valid PSAP request.¹⁴⁴ For all PSAP requests

¹³⁹ See *Second Further Notice*, 29 FCC Rcd at 1555 ¶ 28. Rather than directly billing the end user, CMRS providers and interconnected text messaging providers may choose to negotiate an agreement, pursuant to commercially reasonable price and other terms, that may address questions relating to compensation. Parties are not required to enter into any such arrangement. Regardless of how the CMRS provider receives reasonable compensation, however, the CMRS provider's obligation to carry text-to-911 traffic is limited to end users with an SMS plan, as noted above.

¹⁴⁰ AT&T, Sprint, T-Mobile, and Verizon express concern regarding the scope of responsibility that an access requirement could impose on CMRS providers. See Letter from Nneka Chiazor, Verizon, to Marlene H. Dortch, Secretary, Federal Communications Commission (filed July 31, 2014) (Verizon *et al.* July 31, 2014 *Ex Parte*) (discussing potential policy and technical concerns, on behalf of the four major wireless providers). Even if a covered text provider chooses to implement the CMRS network-based approach for delivery of 911 text messages, we affirm that each individual covered text provider is individually responsible for its compliance with the text-to-911 requirements set forth herein, including responsibility for educating its users regarding how text-to-911 might work for their particular interconnected text messaging applications. Furthermore, we do not specify or require any terms or conditions governing the relationships between covered text providers and CMRS providers, beyond specifying that, to the extent they enter into business agreements regarding access to SMS networks, the terms of such agreements should be commercially reasonable.

¹⁴¹ AT&T Second Further Notice Comments at 5.

¹⁴² *Second Further Notice*, 29 FCC Rcd 1564 ¶ 56.

¹⁴³ See, e.g., 47 C.F.R. §§ 1.3, 1.925; see also *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

¹⁴⁴ We note that the six-month implementation timeframe we adopt here is consistent with the Carrier-NENA-APCO Agreement.

received on or before December 31, 2014, covered text providers must commence text-to-911 service to such PSAPs by June 30, 2015. We find that a six-month implementation window for all covered text providers to begin delivering text-to-911 service to requesting PSAPs is both technically and economically feasible.

48. The *Second Further Notice* proposed to require covered text providers to implement text-to-911 service within six months of a “valid PSAP request.”¹⁴⁵ In response, several commenters agree that a six-month implementation period is sufficient for all CMRS providers, including small and rural CMRS providers.¹⁴⁶ Verizon supports the proposed six-month implementation timeframe, but suggests that the Commission modify the proposal to allow PSAPs and covered text providers to agree on an alternate timeframe beyond six months.¹⁴⁷ Verizon argues that “[t]his will enable service providers to flexibly handle unforeseen delays on an informal basis with individual PSAPs, without the need to burden the Commission with waiver requests.”¹⁴⁸

49. On the other hand, Rural Wireless Association (RWA) argues for permitting CMRS providers up to one year after a PSAP request to begin delivering text messages to that PSAP.¹⁴⁹ RWA states that “[f]or carriers deploying LTE-only networks, texting cannot be provided absent the integration of IP Multimedia Subsystem (IMS) software into the LTE core, which is dependent on the release of IMS software by major equipment and software vendors.”¹⁵⁰ RWA adds that “to date such software has not been made available for use by small wireless carriers,” and argues that a “requirement that [OTT] text providers meet the same compliance deadlines may require [CMRS] providers to incur costs and burdens associated with the provision of network and device capabilities to interconnected text providers.”¹⁵¹ RWA also argues that “[d]ue to the uncertainty surrounding what would be required to provide support for potentially countless number of applications, it is unclear whether carriers can do so within the timeframe envisioned by the Commission.”¹⁵²

50. On balance, we believe that the December 31, 2014 initial “text-capable deadline,” combined with a subsequent six-month period to deliver texts to requesting PSAPs, provides covered text providers with a sufficient amount of time to implement our requirements.¹⁵³ We disagree with RWA that small and rural CMRS providers need more time to become capable of supporting text-to-911 traffic from covered text providers utilizing the CMRS network-based model. As discussed above, CMRS providers need not play an active role in the routing of such traffic and need only refrain from interfering with access to necessary CMRS capabilities.¹⁵⁴ Further, RWA’s argument with respect to obtaining IMS

¹⁴⁵ *Second Further Notice*, 28 FCC Rcd at 1554 ¶ 19.

¹⁴⁶ For example, NENA notes that “clear consensus support for a 6-month implementation window from the first PSAP request provides a further buffer during which any late-discovered kinks can be worked out of individual carrier networks.” NENA *Second Further Notice Reply Comments* at 3.

¹⁴⁷ Verizon *Second Further Notice Comments* at 17.

¹⁴⁸ *Id.*

¹⁴⁹ Comments of Rural Wireless Association, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 2 (RWA *Second Further Notice Comments*) (“For non-LTE carriers, compliance may still be unachievable for some small carriers. Equipment availability and the cost considerations may prevent some carriers from meeting the proposed deadlines. Allowing carriers one year after a PSAP request to route text messages to the requesting PSAP should allow for compliance by most carriers.”).

¹⁵⁰ RWA *Second Further Notice Comments* at 2.

¹⁵¹ *Id.* at 2-3.

¹⁵² *Id.* at 3.

¹⁵³ We note that the requirements adopted herein do not suspend the timelines agreed upon in the Carrier-NENA-APCO Voluntary Agreement.

¹⁵⁴ See *supra* Section III.A.2.b, para. 45.

software represents a business concern that should be addressed through marketplace negotiations. Accordingly, with regard to PSAPs making valid requests for service by December 31, 2014, all covered text providers should commence delivery of texts no later than June 30, 2015.

51. For the purposes of our rules, a “valid PSAP request” means that: (1) the requesting PSAP is, and certifies that it is, technically ready to receive 911 text messages in the format requested; (2) the appropriate local or State 911 service governing authority has specifically authorized the PSAP to accept and, by extension, the covered text provider to provide, text-to-911 service; and (3) the requesting PSAP has notified the covered text provider that it is both technically ready to receive 911 text messages and has been authorized to accept such messages. We note that the elements of a “valid PSAP request,” which we describe here, are generally consistent with the terms of the Carrier-NENA-APCO Agreement.¹⁵⁵ The requesting PSAP may notify a covered text provider by either registering in the Commission’s database (described below), or providing the covered text provider with any other written notification that is reasonably acceptable to the covered text provider. Additionally, while we decline to extend the six-month implementation period for small and rural carriers as RWA suggests, we will allow PSAPs and covered text providers the opportunity to mutually consent to an alternative implementation timeframe, beyond the standard six-month implementation window, as suggested by Verizon. We agree with Verizon that this will “enable service providers to flexibly handle unforeseen delays on an informal basis with individual PSAPs, without the need to burden the Commission with waiver requests.” We require covered text providers to notify the Commission of any such alternative arrangements and deployment schedules within 30 days of entering into such an agreement.¹⁵⁶ We anticipate that any PSAPs requesting text-to-911 service will want to deploy the service as swiftly as possible, and therefore, that PSAPs will not agree to an alternative timeframe unless there is a legitimate reason for doing so.

3. Notification to Covered Text Providers

52. In order to facilitate implementation of our text-to-911 requirements, we will implement a centralized database, to be administered by the Commission, that will reflect the text-readiness of individual PSAPs.¹⁵⁷ We find that a centralized approach would best serve the interests of both PSAPs and covered text providers in the implementation process, rather than requiring PSAPs to make individual requests for text-to-911 service. For example, a PSAP registry will address concerns raised in the record by public safety entities regarding the volume of covered entities that might be subject to our text-to-911 requirements, and the associated burden of reaching out to each of them to request text-to-911.¹⁵⁸

¹⁵⁵ Carrier-NENA-APCO Agreement at 2.

¹⁵⁶ The covered text provider must file such notification in PS Docket Nos. 10-255 and 11-153, and may request confidential treatment of its filing or a portion of the filing pursuant to Section 0.459 of the Commission’s rules. 47 C.F.R. § 0.459.

¹⁵⁷ We have previously sought comment in this proceeding on whether to implement a centralized database. See *Further Notice*, 27 FCC Rcd at 15713 ¶ 145. We noted “this approach would arguably have efficiency advantages because it would enable PSAPs to provide notification regarding text delivery only once to all parties, rather than having to inform every wireless carrier or systems service provider individually.” *Id.* The Commission sought comment on whether this registry might be implemented as an extension of the Commission’s PSAP database. *Id.* at ¶ 146. That Master PSAP Registry, established in 2003, serves as a tool to aid the Commission, 911 authorities, PSAPs, and service providers in ascertaining the current operational status of PSAPs. See <http://www.fcc.gov/encyclopedia/9-1-1-master-psap-registry> (last accessed July 24, 2014).

¹⁵⁸ As Texas 9-1-1 Entities notes, “PSAPs do not have the same historical relationship with OTT providers that currently exists between PSAPs and CMRS carriers, or have the same identify and contact information readily available.” Comments of Texas 9-1-1 Entities, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014), at 3 (Texas 911 Entities Second Further Notice Comments). See also BRETSA Second Further Notice Reply Comments at 10 (“The Commission should create and maintain, or mandate, a database of PSAPs requesting text-to-911... it is simply unreasonable... for a PSAP to identify and notify all text messaging providers of its election to receive text-to-911 messages.”).

Utilizing a centralized database would allow PSAPs to indicate their readiness to receive texts to 911 in one place, which would in turn serve as notice to all covered text providers, regardless of whether the PSAP has a previous relationship with the covered text provider. In other words, the registry will simplify the PSAP request process for both PSAPs and covered text providers.

53. Accordingly, the Commission will establish and maintain a centralized database so as to provide PSAPs with an option to register their text-readiness. Registration in the Commission's PSAP database will commence the six-month implementation timeframe for covered text providers in their area. In order for a PSAP to register in our database as "text-ready," the requesting PSAP must certify that it is technically ready to receive 911 text messages in the format requested, and the appropriate local or State 911 service governing authority has specifically authorized the PSAP to accept and, by extension, the covered text provider to provide, text-to-911 service. The database will include contact information so that covered text providers may coordinate with PSAPs regarding the specific implementation criteria, like the PSAP's selected method of receiving texts.¹⁵⁹ PSAPs that are already accepting texts as of December 31, 2014 will be presumed to be "text-ready" and will be automatically registered in the database, unless they inform the Commission otherwise.

54. A centralized database addresses requests from public safety entities seeking a more streamlined process to request text-to-911 service. Covered text providers should periodically review the text-readiness of PSAPs in their service areas and reach out to these PSAPs as necessary to coordinate implementation of text-to-911 service. To the extent possible, we encourage PSAPs and covered text providers to follow the processes recommended by CSRIC in its recent report outlining best practices and guidelines for PSAPs making requests for text-to-911 service.¹⁶⁰

55. We direct the Public Safety and Homeland Security Bureau (PSHSB) to develop, implement, and maintain the centralized database for purposes of implementing our text-to-911 requirements. PSHSB should provide additional information regarding the database, including the availability of the database for PSAP registration, in a subsequent Public Notice.¹⁶¹ In the interim, PSAPs that are text-ready before the database is publicly available may file notifications with the Commission.¹⁶² We also direct PSHSB to maintain and regularly update its website to identify any new PSAPs that have provided notice of their text readiness, and to supplement updates to the website with regular Public Notices.

56. While registration in the database is one way by which PSAPs may trigger text-to-911 obligations by covered text providers, and as noted above, the record suggests that it is the most efficient

¹⁵⁹ That is to say, whether the PSAP will receive texts through the TTY translation, web browser, or all-IP delivery method. See *Further Notice*, 27 FCC Rcd at 15708-12 ¶¶ 127-43. See also *CSRIC PSAP Best Practices Report* at Section 5.2 (providing information on testing and trialing of service for each delivery method). We note that this is generally consistent with the terms of the Carrier-NENA-APCO Agreement.

¹⁶⁰ *CSRIC PSAP Best Practices Report*. CSRIC's report includes information on operational considerations for implementing SMS text-to-911, including information on the three available delivery methods for interim SMS text-to-911. CSRIC includes an "SMS Text-to-9-1-1 Readiness Questionnaire" for PSAPs to complete and return to covered text providers as part of the text-to-911 implementation process, in order to provide full and consistent information regarding the PSAP's technical and operational capabilities to receive texts to 911. We anticipate that covered text providers may seek a waiver of the implementation deadline because a PSAP that requests text messages is not, in fact, text-ready. To the extent the PSAP has undertaken the best practices referenced in CSRIC's report, we will adopt a rebuttable presumption that a PSAP is text-ready and has submitted a valid PSAP request, thereby placing the burden on carriers to show otherwise.

¹⁶¹ The Bureau may act on delegated authority on behalf of the Commission in all matters pertaining to public safety, homeland security, national security, emergency management and preparedness, disaster management, and ancillary operations. See 47 C.F.R. §§ 0.191, 0.392.

¹⁶² Parties should file in PS Docket Nos. 10-255 and 11-153.

mechanism, we do not require its use. The obligations of covered text providers may also be triggered by any other written notification to them by PSAPs. Finally, we note that PSAPs retain the choice of whether to receive texts to 911, as well as whether to participate in registering as “text-ready” in our centralized database. Not registering in the database will not preclude PSAPs from being able to obtain text-to-911 service. That is, covered text providers still must provide text-to-911 service within six months of receiving a valid PSAP request, irrespective of whether a PSAP has registered as “text-ready” with the Commission.

B. Routing of Text Messages to 911

57. We require covered text providers to route texts to 911 using coarse location (cell ID and cell sector) or other equivalent means that allows the covered text provider to route a text to the appropriate PSAP. The record in this proceeding, as well as the current ATIS/TIA Joint Standard 110 (J-STD-110), demonstrate that coarse location is currently feasible for text-to-911 purposes, and it is already being used to route texts to the proper PSAP in active text-to-911 deployments.¹⁶³ The ATIS/TIA J-STD-110 defines coarse location information as “typically the initial location estimate of the mobile device,” consisting of “the Latitude/Longitude (X/Y) coordinates representing the geographic center (centroid) of the cell site/cell site sector area currently associated with the mobile device where the emergency communication dialogue was initiated.”¹⁶⁴

58. On June 18, 2014, CSRIC IV WG1 released a report evaluating the ability of covered text providers to generate and deliver enhanced – that is, more granular than coarse – location information with text to 911.¹⁶⁵ CSRIC concludes that “there is no solution for generating enhanced location in an SMS text to 9-1-1 session for any currently deployed systems that does not require user equipment (‘UE’) changes, network changes, or both.”¹⁶⁶ CSRIC further notes that “some existing technologies, upon which the SMS text to 9-1-1 service is based, face challenges and provide for extremely limited additional standards development.”¹⁶⁷ CSRIC recommends that the Commission “refrain from wireless E9-1-1 Phase II -like mandates for SMS text to 9-1-1 service and instead encourage further development and implementation of more robust . . . solutions.”¹⁶⁸ CSRIC also stated in its PSAP Best Practices report that, under the J-STD-110, “only coarse location is required, any rebid functionality is OPTIONAL.”¹⁶⁹

59. The CSRIC report and the consensus in the record lead us to conclude that enhanced location information cannot be supported by all currently available location technologies or all devices and operating systems.¹⁷⁰ However, to wait for the capability to support more granular location data – rather than adopting a coarse location requirement now – would delay the implementation of text-to-911. We note that some form of location information is necessary in order to route a text message to the

¹⁶³ See, e.g., Comments of CTIA – The Wireless Association, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 9-10 (CTIA Second Further Notice Comments); TCS Second Further Notice Comments at 12-13.

¹⁶⁴ See J-STD-110, section 3.1.2, p. 3.

¹⁶⁵ CSRIC IV WG1, Investigation into Location Improvements for Interim SMS (Text) to 9-1-1, Final Report (June 18, 2014) (*CSRIC Enhanced Location Report*).

¹⁶⁶ *CSRIC Enhanced Location Report* at 1.

¹⁶⁷ *Id.*

¹⁶⁸ *Id.* at 2.

¹⁶⁹ *CSRIC PSAP Best Practices Report* at 12-14 (emphasis in original).

¹⁷⁰ See APCO Second Further Notice Comments at 5; NASNA Second Further Notice Comments at 5-6; AT&T Second Further Notice Comments at 6; CTIA Second Further Notice Comments at 10; RWA Second Further Notice Comments at 3; Sprint Second Further Notice Comments at 9; T-Mobile Second Further Notice Comments at 5, 7; Verizon Second Further Notice Comments at 16; ATIS Second Further Notice Comments at 4-5; Heywire Second Further Notice Comments at 7; TCS Second Further Notice Comments at 12-13.

appropriate PSAP and to implement text-to-911 rules. Thus, based on CSRIC's findings and other record support that coarse location is currently feasible, and except as noted below with respect to interconnected text providers that do not access the CMRS network, we require that covered text providers must obtain location information sufficient to route texts to the appropriate PSAP, using coarse location information or an equivalent means. The Commission has previously noted that J-STD-110 permits a CMRS provider to provide enhanced location information where possible.¹⁷¹ To the extent it is feasible, we encourage them to do so.

60. In the event a covered text provider implements a text-to-911 solution that does not access the CMRS network – and therefore cannot provide coarse location – the covered text provider must obtain sufficient location information through some other means (*e.g.*, through commercial location-based services or through the device's location application programming interface) to route the text to the appropriate PSAP. All covered text providers using device-based location information that requires consumer activation must clearly inform consumers that they must grant permission for the text messaging application to access the wireless device's location information in order to enable text-to-911. If a consumer does not permit this access, then the application must provide an automated bounce-back message.¹⁷²

61. Finally, we emphasize that this approach is only an interim solution, and that we intend to require the delivery of enhanced location information with texts to 911 as soon as it is technically feasible to do so. In the *Third Further Notice* below, we seek comment on how enhanced location information could eventually be generated and delivered with texts to 911.¹⁷³ We also seek comment on the findings in CSRIC's June 2014 report on the feasibility of providing enhanced location information with texts to 911.¹⁷⁴

C. Liability Protection

62. In the *Further Notice*, the Commission recognized that adequate liability protection is needed for PSAPs, CMRS providers, interconnected text providers, and technology vendors to proceed with implementation of text-to-911.¹⁷⁵ The Commission noted that the 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.¹⁷⁶ In the Next Generation 9-1-1 Advancement Act of 2012 (NG911 Advancement Act), Congress further extended these parity provisions to providers of NG911 services.¹⁷⁷ The *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.¹⁷⁸ The Commission observed that under the Carrier-NENA-APCO Agreement, the four major CMRS providers have committed to deploy text-to-911 capability without any precondition requiring additional liability protection other than the protection

¹⁷¹ *Second Further Notice*, 29 FCC Rcd at 1559 ¶ 41.

¹⁷² 47 C.F.R. § 20.18(n)(2). In *any* situation where a covered text provider is unable to route a text to the appropriate PSAP, the covered text provider must deliver an automated bounce-back message in accordance with our rules.

¹⁷³ *See infra* Section IV.A.

¹⁷⁴ *See infra* Section IV.A, para. 85.

¹⁷⁵ *Further Notice*, 27 FCC Rcd at 15673 ¶ 167. The Commission also sought comment on liability issues in the *Notice*. *Notice*, 26 FCC Rcd at 13664 ¶ 120.

¹⁷⁶ *Further Notice*, 27 FCC Rcd at 15720 ¶ 164. *See* 47 U.S.C. § 615a.

¹⁷⁷ Next Generation 9-1-1 Advancement Act of 2012, 47 U.S.C.A. § 1472 (2012), Sec. 6506 (NG911 Advancement Act).

¹⁷⁸ *Further Notice*, 26 FCC Rcd at 15721 ¶ 167.

afforded by current law.¹⁷⁹ Nevertheless, the *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.¹⁸⁰

63. In January 2014, the Commission sought further comment on whether adopting the proposed text-to-911 requirements would assist in mitigating liability concerns by establishing standards of conduct that could be invoked by covered text providers in defense against state tort liability or similar claims. In response, several commenters argue that liability protection for 911 market participants should be established on a national scale.¹⁸¹ For example, AT&T argues that “[Text-to-911] ... demands a national plan and . . . clear and unambiguous, comprehensive, standardized, nationwide liability protection that applies equally to all parties in the stream of commerce that support it.”¹⁸²

64. With regard to parity of liability protection for interconnected text providers, VON Coalition urges the Commission to expand liability protection for these providers and notes that “exposing interconnected text providers to unlimited liability for 911 texts will chill investment, research and development in these important services.”¹⁸³ However, two commenters suggest that the NET 911 Act provides a sufficiently flexible definition of “other emergency communication service provider,” such that any new entrants to this market – *i.e.*, non-CMRS covered text providers – would be entitled to the parity of liability protection set forth in the NET 911 and NG911 Advancement Acts, and therefore, would not be exposed to unlimited liability.¹⁸⁴

65. Based on our interpretation of the statute, we conclude that covered text providers subject to our text-to-911 requirements fall within the scope of “other emergency communications service providers” under Section 201(a) of the NET 911 Act. Under Section 201(a), “other emergency communications service providers” include “an entity other than a local exchange carrier, wireless carrier, or an IP-enabled voice service provider that is required by the Federal Communications Commission consistent with the Commission’s authority under the Communications Act of 1934 to provide other emergency communications services.”¹⁸⁵ In this *Second Report and Order*, we find interconnected text

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

¹⁸¹ See, e.g., AT&T Second Further Notice Comments at 8; T-Mobile Second Further Notice Comments at 14; Microsoft Second Further Notice Comments at 6.

¹⁸² AT&T Second Further Notice Comments at 8.

¹⁸³ VON Coalition Second Further Notice Comments at 8.

¹⁸⁴ TCS Second Further Notice Comments at 19 (“[I]n enacting the NET 911 Act, Congress anticipated that certain improvements to the 9-1-1 infrastructure would involve entities other than Local Exchange Carriers (LECs) and VoIP and CMRS providers, and that Congress intended and directed the FCC to ensure that these new entities would be afforded liability protection.”); T-Mobile Second Further Notice Comments at 12-13 (There should . . . be no confusion regarding application of the NET 911 Act’s liability protections for OTT text providers themselves.”).

¹⁸⁵ New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. 110–283, July 23, 2008, 122 Stat. 2620 (NET 911 Act); see also 47 U.S.C. § 615b(9)(A). We noted in the *Further Notice* that the Carrier-NENA-APCO Agreement does not address liability protection, indicating that the four CMRS provider parties were willing to proceed with the implementation of Text-to-911 under the existing law at the time, including the NET 911 Act. *Further Notice*, 26 FCC Rcd at 15721 ¶ 167. The NET 911 Act alternatively defines “other emergency communication service providers” to include, in the absence of a Commission requirement, “an entity that voluntarily elects to provide other emergency communications services and is specifically authorized by the appropriate local or State 9-1-1 service governing authority to provide other emergency communications services.” 47 U.S.C. § 615b(9)(B). We find that the voluntary provision of text-to-911 service, in response to an authorized PSAP request, falls within the scope of “other emergency communication services,” and accordingly, would also receive parity of liability protection for such service under the NET 911 Act.

providers within the scope of our jurisdiction and require them to support text-to-911 service.¹⁸⁶ We also find that text-to-911 service, as we require in this *Second Report and Order*, satisfies the definition of “other emergency communications services,” because it clearly provides “emergency information” to a PSAP via radio communications.¹⁸⁷ Accordingly, we conclude that Congress intended that all covered text providers should be given parity of liability protection for the provision of text-to-911.

D. Treatment of Voluntary Agreement

66. In the *Second Further Notice*, we sought comment on whether and 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.¹⁸⁸ We also sought comment on what should happen if a company violates its voluntary commitment after being afforded an opportunity to correct,¹⁸⁹ on the potential risks as well as benefits of a “safe harbor” approach to voluntary commitments,¹⁹⁰ and on several ancillary issues, including, *inter alia*, the nature of an “election” into a voluntary agreement and whether parties must join a voluntary agreement at its inception, or may join such an agreement at a later time.¹⁹¹

67. Several commenters state that such an approach would be appropriate for covered text providers who have entered into voluntary agreements to support text-to-911.¹⁹² NASNA submits that “if the Commission allows the safe harbor approach, violators should be subject to enforcement action and should be switched to the rules track for sustained failure to meet the obligations of their voluntary agreement. Willful and sustained violators are not going to go away as business entities; in order to ensure the Commission’s goals are met, it may need to take firm action.”¹⁹³

68. We find it unnecessary to adopt any “safe harbor” provisions at this time. The only parties to date that have entered into a voluntary agreement to support text-to-911 are the CMRS provider parties to the Carrier-NENA-APCO agreement. Because the scope of the rules adopted in this *Second Report and Order* is consistent with the scope of their obligations under the voluntary agreement, there is no need for a “safe harbor.” Since no other parties would be eligible for safe harbor status, we decline to adopt any such provision here.

E. Consumer Education

69. The Commission has already committed PSHSB and the Consumer and Governmental Affairs Bureau (CGB) to implement a comprehensive consumer education program concerning text-to-911, and to coordinate their efforts with state and local 911 authorities, other federal and state agencies, public safety organizations, industry, disability organizations, and consumer groups, consistent with those

¹⁸⁶ See *infra* Section III.F.

¹⁸⁷ NET 911 Act, 47 U.S.C. § 615a(8)(providing that “[t]he term ‘other emergency communications service’ means the provision of emergency information to a public safety answering point via wire or radio communications, and may include 9-1-1 and enhanced 9-1-1 service”).

¹⁸⁸ *Second Further Notice*, 29 FCC Rcd at 1564 ¶ 58.

¹⁸⁹ *Id.* at 1565 ¶ 59.

¹⁹⁰ *Id.* at 1565 ¶ 60.

¹⁹¹ *Id.* at 1565 ¶ 61.

¹⁹² APCO *Second Further Notice* Comments at 7; NASNA *Second Further Notice* Comments at 8; NENA *Second Further Notice* Comments at 14-15; T-Mobile *Second Further Notice* Comments at 14. In contrast, BRETSA opposes a “safe harbor” approach. BRETSA *Second Further Notice Reply* Comments at 11 (“Providing ‘safe harbors’ for entities which enter into voluntary agreements could also result in a variety of ‘one-off’ regulations applicable to various parties, resulting in confusion and inconsistent requirements and results.”).

¹⁹³ NASNA *Second Further Notice* Comments at 8.

voluntary measures taken under the Carrier-NENA-APCO Agreement.¹⁹⁴ We find that the Commission's website, together with the continued efforts of PSHSB and CGB, should continue to serve as a leading means of consumer education, and direct the Bureaus to continue their collaborative efforts.

70. We also expect that relevant text-to-911 stakeholders will join in and enhance these educational efforts. We commend the efforts of those stakeholders who have already engaged in consumer outreach efforts.¹⁹⁵ As we implement a comprehensive plan for educating the public on the availability and features of text-to-911, we must consider all angles of engaging and educating the public, including those who are deaf, hard of hearing or have speech disabilities. An effective public education campaign should invest not only in traditional methods of outreach, such as websites and targeted education for more vulnerable segments of the population (including people with disabilities and children), but also in new forms of media – specifically, text messaging. We therefore encourage covered text providers to use text messaging to inform consumers of the availability of text-to-911 once this service has commenced in a given area.

F. Legal Authority

71. In the *Bounce-Back Order*, the Commission closely examined our legal authority in connection with text-to-911 service and identified multiple, independent bases of legal authority to support action in that context. In particular, the Commission found that several provisions of Title III provide the Commission with direct authority to impose text-to-911 bounce-back requirements on CMRS providers,¹⁹⁶ 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,¹⁹⁷ and that the agency has ancillary authority to apply 911 bounce-back requirements to providers of interconnected text messaging services, including OTT providers.¹⁹⁸ The Commission explained, *inter alia*, that imposing 911 bounce-back rules on interconnected text providers was reasonably ancillary to the Commission's Title III mandate regarding the use of spectrum, to its CVAA mandate regarding the migration to fully NG911 capable systems, and to the Commission's statutory authority to adopt 911 regulations that ensure that consumers can reach emergency services so as to promote the safety of life and property.

72. In the *Second Further Notice*, we invited parties to comment on whether there are any reasons why the Commission's foregoing analysis regarding the sources of its authority in Title III, the CVAA, and its ancillary authority should not apply in the context of the proposals in the *Second Further*

¹⁹⁴ *Bounce-Back Order*, 28 FCC Rcd at 7585 ¶ 82. Educational information about text-to-911 is currently available on the Commission's website at <http://www.fcc.gov/text-to-911>.

¹⁹⁵ In particular, we commend the efforts of the Vermont E911 Board, which has launched an extensive text-to-911 consumer education campaign, including an informational website available at http://e911.vermont.gov/text_to_911. Vermont has released educational videos intended to provide consumers with information about the availability of text-to-911, including a video in American Sign Language. These videos are easily accessible through YouTube: https://www.youtube.com/channel/UCupWBgm92g5V-3YEixr_v_Q (last accessed June 23, 2014).

¹⁹⁶ *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.

¹⁹⁷ *Bounce-Back Order*, 28 FCC Rcd at 7592-7600 ¶¶ 100-27. 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 ¶¶ 106-20. Second, and alternatively, the Commission found that its decision was a lawful exercise of the agency's CVAA authority to promulgate certain "other regulations." *See id.* at 7598-7600 ¶¶ 121-27 (quoting 47 U.S.C. § 615c(g)).

¹⁹⁸ *Bounce-Back Order*, 28 FCC Rcd at 7600-05 ¶¶ 128-40.

Notice.¹⁹⁹ We also sought comment on whether text-to-911 is “achievable and technically feasible” for interconnected text providers.²⁰⁰

73. In response to the *Second Further Notice*, no commenter objects to the Commission’s authority to require CMRS providers to support text-to-911. On the other hand, several commenters question the Commission’s authority over interconnected text providers. For example, VON Coalition does not dispute that the Commission’s direct authority under the CVAA extends to the regulation of interconnected text providers. However, it raises two separate questions about the use of that direct authority here. First, it argues that the CVAA precludes any requirement for the use of proprietary technology, and that the “network and server-based models” would violate this mandate. Second, it suggests that these two models – in contrast to the “SMS-API model” – “may” violate the CVAA’s mandate that they be “achievable.”²⁰¹ Although Verizon does not assert that the Commission does not have jurisdiction, it similarly cautions that “the Commission’s authority to regulate OTT text messaging services and applications is limited,” and that the Commission should therefore ensure that any rule adopted under the CVAA is both technically feasible and achievable.²⁰²

74. VON Coalition’s assertion that we are mandating the use of proprietary technologies, systems, or services, contrary to the CVAA, is incorrect.²⁰³ We recognize that most covered text providers may well use the interim SMS standard initially; indeed, as noted above, VON Coalition appears to have no objection to its implementation by December 31, 2014, assuming the cooperation of CMRS providers.²⁰⁴ However, we do not require the use of any specific technology or text messaging protocol, as long as the technology or protocol utilized is capable of properly routing and delivering a text to 911. Finally, as discussed above, we determine that the text-to-911 rules are achievable and technically feasible.²⁰⁵

75. As to the alternate basis for authority over interconnected text providers (*i.e.*, as ancillary to the Commission’s direct sources of statutory authority), VON Coalition seeks to cabin the ancillary authority outlined in the *Bounce-Back Order* as designed solely “to ensure that misleading messages are not sent via radio spectrum.”²⁰⁶ We disagree. Although we need not rely on such ancillary authority given the direct authority provided by the CVAA, there are multiple reasons why mandating text-to-911 capability by interconnected text providers is within the broad scope of the Commission’s ancillary authority.²⁰⁷

76. As outlined in the *Bounce-Back Order*, the Commission has broad authority under Title III to prescribe the nature of the service provided by CMRS providers, and it is undisputed that such authority extends to requiring text-to-911 capability. Given the growing use of third-party text applications over CMRS networks by their customers, ensuring that those applications provide text-to-911 capability is reasonably necessary to promote that capability over spectrum authorized for use under

¹⁹⁹ *Second Further Notice*, 28 FCC Rcd at 1566 ¶ 66. See also *Bounce-Back Order*, 28 FCC Rcd at 7587-7605 ¶¶ 88-140; *Further Notice*, 27 FCC Rcd at 15721-23 ¶¶ 168-72.

²⁰⁰ *Second Further Notice*, 28 FCC Rcd at 1566 ¶ 66.

²⁰¹ VON Coalition *Second Further Notice Comments* at 9-10. VON Coalition concedes that the SMS-API model “is technically feasible and achievable,” and “can likely be implemented by i-text providers by the December 31, 2014, deadline suggested by the Commission.” *Id.* at 4.

²⁰² Verizon *Second Further Notice Comments* at 7-8.

²⁰³ VON Coalition *Second Further Notice Comments* at 9-10.

²⁰⁴ *Id.* at 4-5.

²⁰⁵ See *supra* Section III.A.2.b.

²⁰⁶ VON Coalition *Second Further Notice Comments* at 9.

²⁰⁷ 47 U.S.C. § 154(i). See also *id.* § 303(r).

Title III. Moreover, as the Commission discussed at length in the *Bounce-Back Order*, consumer confusion over which texting services would offer text-to-911 would undermine the Commission's ability to implement text-to-911 effectively.²⁰⁸ Similarly, the purpose of the CVAA was to expand access to emergency services for consumers with disabilities, and if our work is undermined by consumer confusion, we will not be able to fulfill our statutory grant of authority pursuant to the CVAA.²⁰⁹ As applied here, extending text-to-911 requirements to interconnected text providers as well as CMRS providers will support the widespread availability of text-to-911 to those who are deaf, hard of hearing, or speech-disabled, serve to eliminate consumer confusion about the reliability of text-to-911, and thereby assist the Commission in achieving its mandate under the CVAA. This is particularly true in situations where voice calls are dangerous, impractical, or simply incapable of being transmitted, or where time is too critical to require a consumer to determine whether or how she might rely on an alternative CMRS voice or texting capability.

77. We also find that adopting text-to-911 rules is reasonably ancillary to the purpose of 911-related statutes.²¹⁰ Ensuring that consumers can rely on increasingly popular and data-rich texting applications to obtain access to 911 service promotes the availability and effectiveness of 911 service consistent with the central purpose of these statutes.

78. We do not interpret these sources of authority as granting the Commission unbounded authority to adopt regulations. Our exercise of ancillary authority here falls squarely within the core of general grant of jurisdiction in Title I with respect to "all interstate and foreign communication by wire and radio."²¹¹ This limited but important context is one where Congress has consistently acted and directed the Commission to ensure that consumers using advanced services, including those provided by entities that the Commission has not classified as telecommunications carriers, and particularly those who are deaf, hard of hearing, or speech disabled, can reach emergency services.²¹² Indeed, one of the principal purposes of the Commission, as set forth by Congress in Section 1 of the Communications Act, is to ensure that we exercise our substantive grants of authority in a manner that "promot[es] safety of life of property."²¹³ We thus find that the exercise of our authority in this case is not only directly authorized by but also reasonably ancillary to the effective performance of our statutorily mandated responsibilities. We find that we could not fully realize those responsibilities if consumers do not view text-to-911 as a reliable means of reaching 911.

²⁰⁸ *Bounce-Back Order*, 28 FCC Rcd at 7602 ¶ 133-35. Consumers may not distinguish between whether they are using an interconnected text application versus the CMRS networks' native text messaging platform – in all likelihood, in an emergency situation in which time is critical, consumers will use whatever texting service they most commonly use and are most comfortable with. If interconnected text messaging applications – commonly used in lieu of CMRS networks' native text messaging platforms – do not work, consumers may well erroneously conclude that the same is true with respect to CMRS network platforms, or they may lose time thereafter determining how best to navigate to such platforms in emergency situations.

²⁰⁹ *Bounce-Back Order*, 28 FCC Rcd at 7602 ¶ 135.

²¹⁰ *Id.* at 7603 ¶ 136 n. 342, citing NET 911 Act, 47 U.S.C. § 615a-1 (2008)(codifying the Commission's E911 requirements for interconnected VoIP services and authorizing the Commission to amend those requirements); Wireless Communications and Public Safety Act of 1999, P.L. 106-81, 113 Stat. 1286; 47 U.S.C. § 615a (1999) (911 Act) (establishing 911 as the national emergency number and requiring the Commission to provide for appropriate transition periods for areas in which 911 was not in use); 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) (addressing 911 deployment).

²¹¹ *Bounce-Back Order*, 28 FCC Rcd at 7600-01 ¶ 129, citing 47 U.S.C. § 152(a).

²¹² *Id.* at 7602-3 ¶¶ 134-37 (discussing the 911 Act, the NET 911 Act, and the ENHANCE 911 Act).

²¹³ 47 U.S.C. § 151.

G. Task Force on Optimal PSAP Architecture

79. We find that further examination is needed, in cooperation with state, local, and tribal jurisdictions and their associated PSAPs, on the current structure and architecture of our nation's PSAPs. The large number of PSAPs, now nearing 6800, potentially increases the costs and resources needed from the communications industry, public safety community, and state, local, and tribal governments. In particular, we are interested in determining whether additional consolidation of PSAP facilities and architecture would promote greater efficiency of operations, safety of life, and cost containment, while retaining needed integration with local first responder dispatch and support. This issue is especially timely as public safety communications systems are converting to NG9-1-1 in the coming years. It is also important because a number of states continue to divert critical E911 funding from its intended purposes to unrelated functions. Specifically, the most recent annual FCC report to Congress on this issue found that four states are still diverting such funds and, equally troubling, one state and four territories declined to even respond to our inquiry.²¹⁴

80. CSRIC last updated the Commission on this subject with the issuance of its 2010 final report on public safety consolidation.²¹⁵ In its report, CSRIC's working group stated that "[r]ecent trends toward regional, multi-jurisdictional and multi-disciplinary solutions with standards based shared systems have demonstrated that they can lead to technical, operational, and financial advantages for the participants."²¹⁶ While that report is useful, a new review and updated data, given the numerous changes in technology, would be informative. Accordingly, we direct PSHSB, consistent with any and all requirements of the Federal Advisory Committee Act,²¹⁷ to convene a task force that includes representatives from state, local and tribal authorities and the currently constituted CSRIC to study and report findings and recommendations on the following issues by April 30, 2015: 1) optimal PSAP system and network configuration in terms of emergency communications efficiency, performance, and operations functionality; 2) cost projections for conversion to and annual operation of PSAPs that incorporate such optimal system design; 3) comparative cost projections for annual maintenance of all existing PSAPs annually and upgrading them to NG911; 4) recommendations on ways to prevent states from diverting E911 funding to other purposes;²¹⁸ and 5) whether states that divert E911 funds should be ineligible to participate on various FCC councils, committees, and working groups.²¹⁹ These recommendations will provide a benchmark for the Commission, state, local, and tribal authorities, PSAPs and others to compare approaches for improving the effectiveness and efficiency of the nation's current and future 911 system.

IV. THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

A. Enhanced Location

81. While we recognize that enhanced location information is not yet universally attainable for texts to 911 over either SMS or other messaging platforms protocols under development, we seek

²¹⁴ Fifth Annual Report to Congress on State Collection and Distribution of 911 and Enhanced 911 Fees and Charges (rel. Dec. 31, 2013) at 13, Table 4.

²¹⁵ CSRIC Working Group 1A, Key Findings and Effective Practices for Public Safety Consolidation, Final Report (Oct. 2010) (*CSRIC Public Safety Consolidation Report*).

²¹⁶ *CSRIC Public Safety Consolidation Report* at 5.

²¹⁷ 5 U.S.C.A. App. 2.

²¹⁸ The NET 911 Act does not prevent the ability to impose and collect fees for the support or implementation of 9-1-1 services, "provided that the fee or charge is obligated or expended only in support of 9-1-1 and enhanced 9-1-1 services, or enhancements of such services, as specified in the provision of State or local law adopting the fee or charge." 47 U.S.C. § 615a-1(f)(1).

²¹⁹ In making its recommendations, the task force should also take appropriate account of Section 410 of the Communications Act governing joint boards and commissions. *See* 47 U.S.C. § 410.

comment below on the specific approaches and a likely timeframe for covered text providers to achieve the capability to provide enhanced location with text-to-911 communications. This additional functionality will enable PSAPs to dispatch first responders more directly and quickly to the scene of an emergency.²²⁰ We acknowledge the collaborative effort underlying CSRIC's *Enhanced Location Report* and CSRIC's recommendation that the Commission "refrain from wireless E9-1-1 Phase II-like mandates" for SMS text to 911 service and instead encourage further development and implementation of more robust solutions.²²¹ CSRIC's report, however, suggests that one CMRS provider can currently deliver enhanced location information, using a commercial location-based technology in support of SMS text-to-911.²²² In light of our important public safety interest in delivering more accurate location information with texts to 911, and considering that enhanced location technologies already exist and that other standards development beyond the current J-STD-110 have been underway, we see no reason to delay the potentially life-saving delivery of enhanced location information.

82. However, in light of CSRIC's concern about "Phase II-like mandates," and the current state of technology, we believe a less specific obligation is appropriate as an initial matter. We propose that, no later than two years of the effective date of the adoption of final rules on enhanced location, covered text providers must deliver enhanced location information (consisting of the best available location that covered text providers could obtain from any available location technology or combination of technologies, including device-based location) with texts to 911. We seek comment on whether solutions could be developed to provide enhanced location in this timeframe and, if not, what would be a suitable timeframe. Our ultimate location accuracy objective is to require covered text providers to deliver all communications with 911 with location information that is sufficiently granular to provide a "dispatchable address."²²³

83. As noted above, for purposes of a near-term requirement, we propose to use the term "enhanced location" to mean the best available location. We recognize that the granularity of the enhanced location may vary by text-to-911 session, according to the user's particular device capabilities and settings. In some instances, we would expect that the device would approximate the user's address, consistent with what a consumer could expect from commercial location-based services (cLBS) capabilities today. We believe an enhanced location requirement would provide substantial public safety benefits to consumers who need to reach 911 through text-capable communications. We seek comment on this assertion below, particularly to the extent to which such improvements would result in tangible benefits with respect to the safety of life and property compared to the cost of meeting the proposed requirements.²²⁴

84. *Technical feasibility.* The *Policy Statement and Second Further Notice* indicated that "developing the capability to provide Phase II-comparable location information" with 911 text messages "would be part of the long-term evolution of text-to-911."²²⁵ Although the Commission did not propose a date certain to meet such a location requirement, the *Second Further Notice* requested comment on the

²²⁰ *Policy Statement and Second Further Notice*, 29 FCC Rcd at 1548 ¶ 3.

²²¹ *CSRIC Enhanced Location Report* at 1-2.

²²² *Id.* at 18.

²²³ See Wireless E911 Location Accuracy Requirements, PS Docket No. 07-114, *Third Further Notice of Proposed Rulemaking*, 29 FCC Rcd 2374, 2395 ¶ 50 (2014) (*E911 Location Accuracy Third Further Notice*) (describing the Commission's long-term goal of "dispatchable address," which includes the caller's building address, floor level, and suite/room number).

²²⁴ See *infra* Section IV.C.

²²⁵ *Policy Statement and Second Further Notice*, 29 FCC Rcd at 1548 ¶ 3.

provision of Phase II-equivalent location information with text-to-911 calls.²²⁶ In response, the majority of commenters indicate that delivery of enhanced location information is not possible at this time.²²⁷

85. CSRIC's *Enhanced Location Report* assesses the capability to include enhanced location information for SMS text-to-911 services and addresses the limitations of the current standard, ATIS/TIA J-STD-110, underlying SMS text-to-911. In view of the differences between the SMS text platform and the CMRS network,²²⁸ CSRIC finds three key limitations contributing to the problem of delivering enhanced location information over SMS architecture: (1) the current standard does not include a specification for the emergency message interaction with the handset, such that an emergency text to 911 cannot enable location information by overriding user location privacy settings and GPS location capabilities enabled by the handset;²²⁹ (2) enhanced location information takes more time to generate than coarse location, such that relying on enhanced location to initially route an SMS text to 911 could delay the routing process up to 30 seconds;²³⁰ and (3) only some of the location platforms that are currently deployed have the technology necessary to generate enhanced location information.²³¹ CSRIC's *Enhanced Location Report* concludes that "there is no solution for generating enhanced location in an SMS text to 9-1-1 session for any currently deployed systems that does not require user equipment (UE) changes, network changes, or both."²³²

86. Although current text-to-911 deployments may not support enhanced location, CSRIC's report recommends several approaches that stakeholders could explore to provide enhanced location information during SMS text-to-911 sessions. In particular, CSRIC examines four approaches: (1) network-based location,²³³ (2) handset-based approaches,²³⁴ (3) end-to-end text-to-911 with location

²²⁶ *Second Further Notice*, 29 FCC Rcd at 1563-64 ¶¶ 41-44.

²²⁷ For example, T-Mobile contends that "since SMS-based text-to-911 does not place the handset into Emergency Service Mode, certain user interface and privacy settings may restrict the use of some location technologies that would otherwise be available for an E911 voice call." See T-Mobile Second Further Notice Comments at 7; see also Verizon Second Further Notice Comments at 13. ("Routing for wireless 911 voice calls is pre-determined according to the location of the cell sector that receives the 911 call as that data is entered into the stand-alone 911 location server," while for text-to-911, the commercial location server is used "to obtain the serving cell location" based on a "cell sector centroid (a.k.a. the 'coarse location') for routing the call" to the PSAP).

²²⁸ *CSRIC Enhanced Location Report* at 12 (stating that "[w]ireless E9-1-1 relies on the ATIS/TIA J-STD-036 call procedures and call flows that are fundamentally different than how an SMS text message is initiated"). CSRIC adds that processing an E911 voice call includes "specialized emergency network functions" (either a Mobile Positioning Center (MPC) for CDMA networks or a Gateway Mobile Location Center (GMLC) for GSM/UMTS networks) to initially route the call, based on serving cell site information linked to a civic location and specific PSAP. *Id.*

²²⁹ *CSRIC Enhanced Location Report* at 14. See *infra* at Section IV.A, para. 99 (discussing the problem of privacy settings).

²³⁰ *Id.* at 14. CSRIC reports that "[f]iner grained location information that is dynamically generated takes more time . . . given the nature of real-time measurements and network latencies in processing a real-time position estimate." *Id.*

²³¹ *Id.* at 14 (finding that "enhanced location depends on a variety of measurement inputs – some which may not be available" when the location is requested. An adverse impact on "overall yield of the location" can result).

²³² See *supra* Section III.B, para. 58, quoting *CSRIC Enhanced Location Report* at 1. See also *CSRIC Enhanced Location Report* at 21, Sec. 6.2 "Findings – Updating Location Information."

²³³ CSRIC considers two network-based location methods: Uplink Time Difference of Arrival (U-TDOA) and Radio Frequency Pattern Matching (RFPM). The U-TDOA location method "make[s] time or power measurements on the radio interface to determine the device position, which requires the handset to be in a radio frequency ('RF') transmit state for a brief period (about 1 second) of time, but SMS communication is not blocked during that interval. [Universal Mobile Telecommunications Systems] has built-in procedures to bring the handset to a state in

(continued....)

embedded in the SMS message,²³⁵ and (4) a modified “embedded location” approach using a user-downloaded texting application.²³⁶ We seek comment on these different approaches, as described in the *Enhanced Location Report*, and whether they could support the delivery of enhanced location information with texts to 911 in a near-term timeframe. What challenges must be overcome and what are the costs associated with implementation of the different approaches?²³⁷ In what timeframe could these approaches be implemented?

87. We observe that using device-specific location appears to be technically feasible, given CSRIC’s remark that handset-based location technology, “using cLBS methods, is currently being used by at least one U.S. CDMA carrier for network deployments supporting SMS text-to-9-1-1.”²³⁸ We acknowledge CSRIC’s findings that the delivery of more granular location information than coarse location continues to present challenges. For this reason, we believe that an enhanced location requirement that is premised upon the delivery of best available location, using any available location technology or combination of technologies, strikes a balance that promotes our important public safety objectives, while being practicable and reasonable within these potential limitations. We seek comment on how “best available” location information would be determined. Among multiple “available” locations, what would determine which available location information is “best?” What are the necessary conditions for a location technology to be considered “available,” to the device, such that a covered text provider may use it for routing or providing additional location information? Are there any additional factors we should consider with respect to assessing what should be considered the “best available location” for a particular text-to-911 session?

88. In addition to the approaches examined by CSRIC, two commenters suggest that the delivery of some form of enhanced location information by CMRS providers is technically feasible in the near term. First, TruePosition contends that existing network-based U-TDOA location capabilities could be used to deliver location information, with “relatively minor development effort,” for texts to 911.²³⁹ TruePosition asserts that, although “[t]he solutions produced by the voluntary Carrier-NENA-APCO agreement, and the J-STD-110 standard, do not currently define an interface protocol to retrieve sender/customer location information,” those solutions provide a platform “to build a more permanent solution to the problem of identifying the location of the customer who has sent an emergency text

(Continued from previous page) _____
which it can be located using U-TDOA.” *CSRIC Enhanced Location Report* at 18. RFPM “relies on [user equipment] measurements that are reported to a server for location determination.” *Id.*

²³⁴ *CSRIC Enhanced Location Report* at 18.

²³⁵ *Id.* at 20 (the A-GPS-based location information, including latitude and longitude, “would be appended at the end of the text message as soon as the user presses the SEND button”). CSRIC adds that if the location information were unavailable at “SEND,” a follow-up text message would be sent as soon as the information is available. *See id.*

²³⁶ *CSRIC Enhanced Location Report*, Sec. 6, and “Updating Location Information During SMS Text to 9-1-1,” at 16-22.

²³⁷ We note that, for the handset-based approach, CSRIC explains that consumers must download a location agent application to allow the use of commercial location-based service (cLBS) methods to support location requests from the TCC. CSRIC notes, however, that users must turn off their location privacy settings for the cLBS and that “[t]his approach does not currently work with all US operating systems.” *CSRIC Enhanced Location Report* at 19. We address the topics of leveraging cLBS and privacy issues in greater detail below. *See infra*, Sec. IV.A., paras. 96-101.

²³⁸ *CSRIC Enhanced Location Report* at 18.

²³⁹ Comments of TruePosition, PS Docket Nos. 10-255 and 11-153 (filed Apr. 4, 2014) at 6 (TruePosition Second Further Notice Comments)(asserting that this capability could be implemented “by the transmission of an SMS receive acknowledgement of either the response SMS from the PSAP, or a ‘silent’ SMS sent to the device for the specific purpose of locating it”). The WG1 Report notes that TruePosition’s specific proposed solution “was not included due lack of support from other members.” *See CSRIC Enhanced Location Report* at 13, n.36.

message.”²⁴⁰ We seek comment on the technical feasibility of TruePosition’s proposed approach and whether it offers a path forward for providing enhanced location. Would the “silent SMS” approach be feasible for other location determination mechanisms other than U-TDOA, such as A-GPS? What standards development work would be necessary to implement such an approach?

89. Second, TCS asserts that what it characterizes as “updated Phase II compatible” location technology is readily available to CMRS providers as deployable cLBS platforms, and that such solutions can be deployed either by the user or the CMRS provider.²⁴¹ According to TCS, these cLBS solutions support existing 2G and 3G systems, and are possible under the current J-STD-110.²⁴² TCS’s view appears to be consistent with CSRIC’s reporting that the J-STD-110 architecture also “allows for routing based on a more accurate enhanced location,”²⁴³ and that one U.S. CMRS provider is using “using cLBS methods.”²⁴⁴ CSRIC observes, however, that while enhanced location may be possible where a cLBS platform is available, “based on a CMRS provider’s existing network infrastructure, the availability to provide a cLBS platform can be limited or technically challenging.”²⁴⁵ We seek comment on these particular implementation challenges, and whether it would be possible for covered text providers to deliver enhanced location information in this manner within a near-term timeframe.

90. Further, the comment record indicates that technical complexities exist for interconnected text providers to deliver enhanced location.²⁴⁶ For example, Microsoft submits that, for OTT applications, “the cell site location is not readily available” and that server-based implementation approaches would require testing of location accuracy information, as well as the creation of “standardized acquisition and transmission of that location information” through TCC gateways.²⁴⁷ Bandwidth contends that there is a need for location accuracy solutions that are consistent with both established technical standards supporting existing CMRS solutions and “a broad range of application-derived location solutions commonly used by today’s OTT providers.”²⁴⁸ TCS proposes that OTT providers leverage the existing J-STD-110 standard to require that “emergency text message requests re-use existing SMS APIs in the device, effectively changing the OTT text message interaction into an SMS message dialogue . . .”²⁴⁹ TCS submits that, although this approach “would require OTT text application software modifications,” it

²⁴⁰ TruePosition Second Further Notice Comments at 5. TruePosition submits that “existing network-based U-TDOA location capabilities can be used to locate a device by the transmission of an SMS receive acknowledgement of either the response SMS from the PSAP, or a ‘silent’ SMS” message to a handset device for the purpose of locating the user texting 911. *Id.* at 6.

²⁴¹ In TCS’s view, the standard thus provides the capability “to request updated location to an originating network’s location platform.” TCS Second Further Notice Comments at 13.

²⁴² TCS Second Further Notice Comments at 13 (asserting such capability is possible through the Open Mobile Alliance (OMA) Mobile Location Protocol (MLP)). TCS states that the cLBS platforms are “deployable” in both “control plane and user plane configurations.” *Id.*

²⁴³ *CSRIC Enhanced Location Report* at 15.

²⁴⁴ *Id.* at 18.

²⁴⁵ *Id.* at 13.

²⁴⁶ We note that the capability of interconnected text providers to send enhanced location information was not within the scope of CSRIC’s Report. *CSRIC Enhanced Location Report* at 5.

²⁴⁷ Microsoft Second Further Notice Reply Comments at 11-12 (also adding that “[i]f an interconnected application is capturing location information from the device . . . then it must be determined” whether maker of the device or application or a third-party location database service has the legal obligation to test and prove the accuracy of that location information).

²⁴⁸ Bandwidth Second Further Notice Comments at 2.

²⁴⁹ TCS Second Further Notice Comments at 13.

“represents the shortest path to having support for emergency OTT text.”²⁵⁰ We seek comment on the different approaches described by TCS, as well as any additional proposals that would resolve the technical issues of covered text providers in delivering enhanced location information.

91. *Further Standards-Setting Work.* Most commenters indicate that standards bodies and covered text providers will need more time to develop and implement the capability to deliver enhanced location information with texts to 911. Many of the commenters believe that, rather than investing further to modify the interim J-STD-110, the standards work should focus on a long-term approach that would incorporate the enhanced features and location capabilities that NG911 is expected to provide for more granular location information.²⁵¹ For example, NENA supports a longer-term approach based on standards efforts that “would incorporate an integrated location standard which . . . would apply to both voice and text service providers.”²⁵² Additionally, CSRIC reports that modifying the J-STD-110 “would require substantial [3GPP] standards development work, requiring significant development costs and potentially lead to major operational impacts on existing network systems.”²⁵³ We seek comment on the extent to which development of enhanced location solutions for the interim SMS standard would divert resources from NG911 solutions. We also seek comment on when the relevant standards work, referenced by the commenters, is likely to be completed, and whether covered text providers ultimately will be capable of providing dispatchable address information, consistent with the Commission’s long-term goals.

92. We note that Verizon indicates there is “under development” standards work on the Global Text Telephony (GTT) standard. Verizon asserts that this effort focuses on providing capabilities for LTE networks “to include more precise caller location than cell site location by leveraging the same location solution currently under development for VoLTE.”²⁵⁴ We seek comment on the current status of

²⁵⁰ *Id.* (adding that the scope of the J-STD-110 standard “could be extended to include its approach and other potential solutions”). TCS also suggests that OTT providers could use “a CMRS-supplied and-authenticated data connection to a CMRS-contracted TCC,” such that “location acquisition is managed by the TCC and supplied by the CMRS provider’s network.” *Id.* at 14.

²⁵¹ See AT&T Second Further Notice Comments at 6 (stating that “its resources are better directed to the broader NG911 solution that includes support for a real-time Text-to-911 access service —e.g., [MMES] standards through both the [3GPP] and [ATIS] processes” and that it would support “the appropriate standards bodies and CSRIC “to come up with appropriate cost-effective solutions . . .”). See also Sprint Second Further Notice Comments at 9 (“Requiring carriers to enhance and expand the capabilities of the interim solution will require further development effort, time and expense. These resources will be diverted from efforts to implement NG9-1-1, which promises to provide enhanced features and capabilities including the possibility of more precise location information.”). Microsoft also adds that “an industry-wide . . . approach, preferably working through international standards bodies . . .” may be necessary. Microsoft Second Further Notice Reply Comments at 6 (noting “the challenges in . . . conveying the location of [a device using] an app, which is inherently global in nature”).

²⁵² NENA Second Further Notice Comments at 9 (“consistent with the Commission’s enunciated long-term goal” of a unitary accuracy standard). *But see* NASNA Second Further Notice Comments at 5-6 (“If the interim solution will be used for the next 10 years while the migration to end-state NG911 continues, then it needs to include precise location data.”).

²⁵³ See *CSRIC Enhanced Location Report* at 6 (noting the standards work of the “3rd Generation Partnership Project (3GPP) and the 3rd Generation Partnership Project 2 (‘3GPP2’)”).

²⁵⁴ Verizon Second Further Notice Comments at 16. Global Text Telephony allows real time texting capability; it is also “defined in a set of host environments, circuit switched as well as packet switched.” See ETSI 3 GPP, Technical Specification, Universal Mobile Telecommunications System (UMTS); Global Text Telephony (GTT); Stage 2 (3GPP TS 23.226 version 5.2.0 Release 5 (2002-03) at 5, available at http://www.etsi.org/deliver/etsi_ts/123200_123299/123226/05.02.00_60/ts_123226v050200p.pdf (last accessed May 30, 2014). Consequently, it appears that GTT can enable “[i]nterworking with corresponding features in other networks . . .” See *id.* The latest release for GTT is Release 11, focusing primarily on “Real Time Texting” (real-time text or RTT). Real-time text offers real time conversation in text, to be used alone or in combination with other

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the GTT standards effort for the following potential capabilities: (1) providing interoperability or interworking between text messaging platforms and E911 legacy and NG911 networks; and (2) enabling CMRS and other covered text providers to deliver granular location information to PSAPs as more CMRS providers implement LTE networks.

93. Further, the record indicates that LTE networks present the opportunity for providing enhanced location determination with text.²⁵⁵ We seek comment on what measures covered text providers would need to take to implement in LTE networks the ability to provide enhanced location. What would be the costs of implementing such capability? What should the Commission do to encourage the necessary standards work?

94. Similarly, we seek comment on the provision of enhanced location information with MMS-to-911 texts and for location determination of MMS callers. For purposes of providing enhanced location information, MMS-to-911 will need to be evaluated once ATIS develops such standard in which cost effectiveness of MMS is considered, as well as potential problems with receiving MMS at PSAPs. What is the status of standards work on MMS messaging to include enhanced location information? We also seek comment on what factors exist that could affect covered text providers' use of MMS to route texts to 911 with enhanced location information. Will the eventual sunset of SMS further our goal of providing dispatchable address information for communications to 911 on all text-capable media?²⁵⁶ We seek comment on the costs for covered text providers to develop, test, and implement the capability to provide enhanced location information using MMS.

95. Finally, the record reflects that the technological developments and standards-setting efforts on LTE networks, MMS, and multimedia message emergency services (MMES) have already commenced.²⁵⁷ With developments in the CMRS wireless industry to migrate to LTE networks already underway, and the continued evolution and growth of OTT text applications in response to consumer demand, we believe that a reasonable basis exists to anticipate that within the near future, standards bodies will be adopting or releasing standards that address the provision of enhanced location information for 911 text messages. We seek comment on this view.

96. *Enhanced Location through the Use of Commercial Location-Based Services.* As described above, cLBS may present a solution for covered text providers to deliver enhanced location information in the near term.²⁵⁸ In light of the significant potential that cLBS might offer, we seek comment on the technical, privacy, and security issues associated with using cLBS for text-to-911 enhanced location information.²⁵⁹ CSRIC suggests that the use of cLBS platforms is limited and challenging.²⁶⁰ More specifically, CSRIC reports that, concerning cLBS support for A-GPS generated

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 conversational media, and interworking with current and emerging text conversation features in the fixed networks and other mobile networks. *See infra*, Section IV.D, para. 132.

²⁵⁵ We note that CSRIC's Report does not address LTE networks. *See CSRIC Enhanced Location Report* at 6 ("LTE and IMS, the standards of which include the implementation of MMES and Global Text Telephony ('GTT'), are not considered in this report. MMES and GTT both have their own envisioned methods by which text messages can be sent to Public Safety with location estimates included.").

²⁵⁶ *See infra* Section IV.D, paras. 123-24 (for further discussion of the Commission's goals with respect to future texting services).

²⁵⁷ *See* Verizon Second Further Notice Comments at 16; NENA Second Further Notice Reply Comments at 6; ATIS Second Further Notice Comments at 5.

²⁵⁸ *See supra* Section IV.A, para. 89 (addressing TCS's proposal for using cLBS).

²⁵⁹ Here, we take cLBS to refer narrowly to the location services that allow a third party to query for the geo-location of a device, rather than many cLBS, such as apps, that rely on location information provided by operating system location application programming interfaces (APIs).

²⁶⁰ *CSRIC Enhanced Location Report* at 13.

location information, “not all carriers have location platforms capable of providing A-GPS location fixes to support the [TCC].”²⁶¹

97. The record is mixed concerning capabilities for covered text providers to use cLBS platforms. T-Mobile urges that “[t]he Commission . . . ensure that any rules it adopts regarding SMS text-to-911 location information acknowledge the fundamental difference between Phase II E911 voice location estimates and cLBS-based enhanced location estimates,” and that “those requirements must be grounded in the technical and economic limitations of the cLBS service.”²⁶² ATIS suggests that location information derived from cLBS may be a “‘best available’ location” and “not equivalent to the location information obtained for voice emergency calls.”²⁶³ Similarly, CSRIC observes that CMRS providers do not exercise the same control over cLBS platforms as they do for E911 voice calls, and thus, “location estimates may or may not be as reliable or accurate” as E911 voice location technologies.²⁶⁴

98. We seek further comment on how cLBS could be leveraged to provide enhanced location information for text-to-911 in the short term and more granular, dispatchable address information in the long term. While cLBS may deliver location information that is not equivalent to voice location, there are also many instances where cLBS could offer even more granular location than Phase II information provided with voice calls to 911. In fact, consumers today regularly use applications that leverage cLBS to pinpoint their location to a high level of precision. We recognize, however, that cLBS information may vary in quality and reliability. How likely is it that location information derived from cLBS will increase in reliability and accuracy over time? What additional standards work must be accomplished? What would be the costs for covered text providers to test and implement the capabilities that cLBS offer?

99. *Privacy.* Commenters submit that leveraging cLBS services for purposes of providing enhanced location information raises privacy concerns. For example, Verizon notes that, in order to deliver location information using cLBS, covered text providers may “need to maintain ongoing access to providers’ and devices’ commercial [LBS] capabilities,”²⁶⁵ which “may require a user to turn off all the device’s privacy settings with respect to all communications, not just 911-related communications.”²⁶⁶ Sprint and other commenters observe that with cLBS, “a user is capable of disabling GPS location services on the device and there is currently no ‘override’ that exists on most wireless handsets to enable GPS to function if a text message is directed to emergency services.”²⁶⁷ Motorola Mobility adds that

²⁶¹ *Id.* at 11.

²⁶² T-Mobile Second Further Notice Reply Comments at 7-8. *See also* Verizon Second Further Notice Reply Comments at 9 (suggesting that cLBS can be leveraged to implement “location capabilities through IP-enabled and standards based [GTT] services”).

²⁶³ ATIS Second Further Notice Comments at 5 (concerning a study underway on “the expected use of enhanced/updated location information upon a rebid by the PSAP”).

²⁶⁴ *CSRIC Enhanced Location Report* at 23.

²⁶⁵ Verizon Second Further Notice Comments at 15.

²⁶⁶ *Id.* *See also* Motorola Mobility Second Further Notice Comments at 5 (“[r]obust privacy settings . . . empower [consumers] to limit disclosure of their location and other personal information to native and third-party applications.”).

²⁶⁷ Sprint Second Further Notice Comments at 10; Motorola Mobility Second Further Notice Comments at 5 (stating that the override “this functionality does not currently exist for text messaging or other functions.”); Twilio Second Further Notice Comments at 6-7 (“An OTT application’s ability to access and provide accurate location information may [] be limited by . . . the user’s preferences to restrict an application’s access to location information.”); CCA Second Further Notice Reply Comments at 5 (“[a]ttempting to use commercial location services for 911 communications presents . . . issues, including subscriber disablement of location data through privacy settings . . . built into the handsets which do not allow for use of commercial [LBS]”); T-Mobile Second Further Notice Reply Comments at 6-7 (“Carriers and TCC vendors . . . do not have the capability or the authority to override those

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“[t]he ability to override location privacy, both for an OTT interconnected [application] or the native SMS application on the device, is not at all straightforward and may require OS or modem firmware changes.”²⁶⁸ CSRIC also reports that the capability to override privacy settings may not be possible, depending on the smartphone operating system and the device’s equipment manufacturer.²⁶⁹

100. We seek comment on what solutions need to be developed for cLBS platforms to address these privacy issues. What technological developments and standards work needs to occur to override privacy settings for SMS text-based applications over legacy networks in order for enhanced location to be acquired and transmitted consistently to PSAPs with texts to 911? How quickly could these modifications be made? We emphasize that any such override of a user’s device settings should be limited to those instances where a user is sending a 911 text message, and for the sole purpose of delivering the 911 text message to the appropriate PSAP.²⁷⁰ Similarly, in the long term, for advanced NG911-compatible networks, such as IP-based text over LTE networks, what technological developments and standards work by stakeholders must occur to enable overriding of privacy settings for emergency texts to 911? The record generally suggests that, at least for a certain subset of devices, covered text providers and OS providers routinely upgrade the firmware and OS software.²⁷¹ Could any modifications to implement emergency overriding of privacy settings be accomplished in this manner? What are the specific costs that both firmware and software approaches would entail?

101. Finally, what measures can or should the Commission take to address Heywire’s contention that OS providers and hardware manufacturers have been removing or disabling access to geo-location functions available to applications outside of the native pre-authorized applications?²⁷² How many applications and what OS platforms have been affected by this? What coordination must occur to address the issue of privacy settings?

102. *Security.* The record further indicates that the technical and privacy issues in implementing enhanced location over cLBS also raise the issue of security. TCS contends that “application-managed location solutions place too much reliance on handset environment, configuration, and capability and are subject to security threats, including authentication and location spoofing.”²⁷³ Motorola Mobility asserts that “[a]ny location privacy override solution for SMS to 911 must be

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settings, as they do for voice E911 calls, thus limiting their ability—and that of OTT text providers—to obtain that information and pass it along to PSAPs.”).

²⁶⁸ Motorola Mobility Second Further Notice Comments at 5.

²⁶⁹ *CSRIC Enhanced Location Report* at 19-21 (the two approaches are (1) “End-to-End Text to 9-1-1 With [A-GPS] Location Embedded in SMS Message Using System SMS application” and (2) “End-to-End Text to 9-1-1 Using Location Embedded in SMS Message Using User-Downloadable Texting Application.”).

²⁷⁰ In this discussion, we are focused on the development of standards necessary to enable an “emergency mode” for texts to 911, similar to the functionality that would be enabled if the user were to place a voice call to 911.

²⁷¹ WG1 describes firmware “as typically refers[ing] to low level software in a wireless device, such as operating system, wireless modem, pre-loaded applications, or low level services software, that can only be changed by, or made available by, the OEM. The term firmware is used to differentiate from software applications that may be downloaded by the user in the field from any application provider.” *CSRIC Enhanced Location Report* at 37, n.16.

²⁷² See Heywire Second Further Notice Comments at 7 (asserting that “OS providers and corresponding hardware manufacturers” have recently acted to remove or disable “access to geo-location functions available to applications outside of the native pre-authorized applications” and that a technical solution for permitting access to such functionality “would require significant time to bring to market”).

²⁷³ TCS Second Further Notice Comments at 12-13. TCS submits that “[e]merging standards for attaining trusted location information should be considered in any approach,” and that, for OTT providers, “[a]ny text-to-911 service offered should be able to support authentication and authorization by the Mobile Network Operator (MNO)” and “[a]ll text-to-911 subscribers should be identifiable with an identity that could support callback to the subscriber.” *Id.* at 12-14.

thoroughly validated using elaborate regression testing,²⁷⁴ and that “[w]hile the [original equipment manufacturers] that develop smartphones could apply such rigorous testing to the system SMS [application], they have no control over the testing regimen applied to an OTT [application].”²⁷⁵

103. We seek comment on what solutions need to be developed for cLBS to enable enhanced location capability that is secure. What measures can the Commission take to promote secure enhanced location capability and guard against security risks such as location spoofing? What would the cost burdens be on covered text providers, OS providers, and other stakeholders? Should we task CSRIC with location issues further – particularly in the context of making recommendations for enabling the use of cLBS and addressing security concerns to provide enhanced location for texts-to-911?

104. *Timeframe.* Based on the CSRIC *Enhanced Location Report* and the record, we seek comment on the timeframe in which covered text providers could reasonably offer either enhanced location information or more granular location information sufficient to provide dispatchable address information for some or all text-to-911 users. Based on the record, if we wait for covered text providers to migrate from interim SMS solutions to 4G LTE solutions before including enhanced location, we may be looking at a time horizon of five years or more.²⁷⁶ TruePosition submits that “some message text providers have suggested that it may take . . . between four to nine years for a significant majority of their subscribers to migrate to a yet-to-be-finalized permanent solution to this problem *via* Next Generation LTE networks.”²⁷⁷

105. In light of the serious public safety implications, we seek comment on what can be accomplished to deliver enhanced location in a shorter timeframe. With respect to the timeframe to migrate to LTE, TruePosition contends it is “simply far too long to wait while tens of millions of wireless users are left without a Phase II-like location capability.”²⁷⁸ We agree. While NENA asserts that a “Commission mandate for enhanced text location capabilities would, at this juncture, be premature,”²⁷⁹ it notes that “multiple industry stakeholders have already begun developing solutions to enable more precise location capabilities”²⁸⁰ RWA suggests that its members will need “at least two years” to “be capable of achieving more precise location capabilities.”²⁸¹ Heywire adds that an “undertaking” to address OS providers and hardware manufacturers removing or disabling access to “geo-location functions” could take “at least two years,” and that “until . . . a technical method” is found, “it would be impossible to establish a realistic timeframe”²⁸² In light of these comments, and balanced against the significant public policy interest and statutory mandate to promote public safety, we believe that a two-year timeframe to provide enhanced location – from the adoption of final rules on this issue – should be reasonable. We seek comment on this view, as well as how the various factors discussed above, including

²⁷⁴ Motorola Mobility Second Further Notice Comments at 5.

²⁷⁵ *Id.*

²⁷⁶ CSRIC estimates that the interim J-STD-110 solution has an “expected end of lifespan of 5 to 10 years,” with carrier-based SMS text to 9-1-1 “supported by 2nd Generation (‘2G’) and 3rd Generation (‘3G’) networks. *CSRIC Enhanced Location Report* at 6. CSRIC adds that “[a]s these legacy wireless networks are phased out of service, it is probable that SMS text to- 9-1-1 will be supplanted by newer texting technologies . . . as LTE devices with MMES and/or GTT capabilities are sufficiently embedded into carrier subscriber bases.” *Id.*

²⁷⁷ TruePosition Second Further Notice Comments at 5-6 (italics in original).

²⁷⁸ *Id.* at 6.

²⁷⁹ NENA Second Further Notice Reply Comments at 11.

²⁸⁰ *Id.* at 6.

²⁸¹ RWA Second Further Notice Comments at 3.

²⁸² Heywire Second Further Notice Comments at 7 (concerning “implementation of a Phase II solution”).

privacy and security concerns, would impact the establishment of timeframes for covered text providers to deliver enhanced location information.

106. *Confidence and Uncertainty.* Finally, we seek comment on CSRIC’s recommendation that “[a]lthough not all location platforms may be capable of delivering enhanced location information, when such information is available it should be delivered with uncertainty and confidence values.”²⁸³ CSRIC recommends that the Commission “encourage appropriate standards development organizations to incorporate confidence and uncertainty values into existing standards for enhanced location when it can be provided.”²⁸⁴ Is this a necessary component for the delivery of enhanced location with texts to 911? Additionally, CSRIC observes that only one Class of Service (CoS) designation is available under the interim J-STD-110 and recommends adding CoS values to assist PSAPs “in determining the best way to use additional resources to locate a caller in the event the location is not provided or the location that is verbally provided is inaccurate.”²⁸⁵ We seek comment on CSRIC’s recommendations and how these additional features would support the provision of enhanced location for texts to 911, and whether they would help PSAPs respond to texts to 911 by dispatching emergency resources more expeditiously.

B. Roaming Support

107. In the *Second Further Notice*, we emphasized that access to 911 through text messaging is just as critical for roaming consumers as it is for consumers utilizing a home CMRS provider’s network, especially because consumers may be unaware of when they are roaming.²⁸⁶ As NENA explains, “[c]onsumers often have no way of knowing whether their text-capable device is attached to a cell sector belonging to their home provider’s own network or to a sector belonging to a roaming partner.”²⁸⁷ According to APCO, “terms such as ‘home network’ . . . mean little to the average consumer or PSAP.”²⁸⁸ Further, roaming is necessary to encourage competition by allowing smaller and rural CMRS providers the ability to offer their subscribers services comparable to those of larger CMRS providers. We recognize that roaming limitations are likely to disproportionately affect subscribers of smaller and rural CMRS providers, which often “rely extensively” on roaming.²⁸⁹ As CCA argues, “smaller carriers and the customers they serve will be particularly impacted by a prolonged absence of any out-of-network capability to text-to-911, potentially putting these smaller carriers at a competitive disadvantage.”²⁹⁰

108. Moreover, we acknowledged in the *Second Further Notice* that routing 911 text messages from roaming consumers presented technical complexities that might be necessary to resolve before we

²⁸³ *CSRIC Enhanced Location Report* at 2. CSRIC describes uncertainty as “the radius of a circle centered at the reported position (latitude/longitude) within which the caller’s actual location is expected to fall within a certain percentage.” The confidence level represents that same percentage and “is meant to represent the probability of a caller falling within the uncertainty circle.” *CSRIC Enhanced Location Report* at 22.

²⁸⁴ *CSRIC Enhanced Location Report* at 2.

²⁸⁵ *Id.* at 22.

²⁸⁶ *Second Further Notice*, 29 FCC Rcd at 1565-66 ¶ 48 (adding that “carrier coverage maps may reflect coverage where [consumers] may only have roaming agreements”). See also *Further Notice*, 27 FCC Rcd at 15707-08 ¶¶ 124, 126.

²⁸⁷ NENA *Second Further Notice Comments* at 10. We recognize that some handset screens may display either a symbol or other indication that a consumer is roaming. However, this is not always the case. For instance, some CMRS providers may offer all-inclusive service plans that do not differentiate between a subscriber remaining in the CMRS provider’s service area or roaming.

²⁸⁸ APCO *Second Further Notice Comments* at 6.

²⁸⁹ NENA *Second Further Notice Comments* at 10.

²⁹⁰ CCA *Second Further Notice Reply Comments* at 6.

could require covered text providers to support text-to-911 in roaming situations.²⁹¹ A key component of providing text-to-911 while roaming is obtaining location information to ensure proper routing of the text to the appropriate PSAP. Current SMS text delivery protocols do not allow for location information to be included with SMS texts-to-911 while roaming, which precludes the ability of covered text providers to route texts to an appropriate PSAP. SMS texts to 911 are handled by the consumer's home network,²⁹² which routes the text to the appropriate PSAP based on coarse location the TCC obtains from a location server in the home CMRS provider's network.²⁹³ When a consumer is roaming, the SMS text-to-911 is sent back to the home network for handling.²⁹⁴ As T-Mobile explains, "[l]ocation lookup occurs in the home network," but "in the case of roaming SMS messages, that lookup, which allows the TCC to determine whether an applicable PSAP accepts 911 texts, will fail because the location information was not generated by the home network but rather by the serving network, and the serving network does not pass along this location data with the SMS."²⁹⁵

109. While the record shows that roaming cannot be supported for text-to-911 at this time, there is also evidence that there may be several different solutions that could be implemented to address this issue.²⁹⁶ We therefore refrain from adopting a roaming requirement at this time, but propose to require covered text providers to support roaming for text-to-911 no later than two years from the effective date of the adoption of final roaming rules, and we seek comment on this approach. Specifically, we seek comment on whether solutions could be developed to provide roaming support in this timeframe and, if not, what would be a suitable timeframe.²⁹⁷

110. One potential solution would be to update the current text-to-911 standard for SMS to provide for sharing of cell sector data through a hub-and-spoke mechanism. RWA notes that "the establishment of a centralized database of supported PSAPs accessible to all carriers could address this issue."²⁹⁸ Using a "hub-and-spoke" model, CCA states, "carriers' location platforms would interconnect into a centralized hub which could make cell sector information available to all connected providers."²⁹⁹ We seek comment on the technical feasibility of adopting the hub-and-spoke approach to address near-

²⁹¹ *Second Further Notice*, 29 FCC Rcd at 1565-66 ¶ 48. For example, the current standard for text-to-911, ATIS/TIA J-STD-110, as well as the Carrier-APCO-NENA Agreement, do not provide for roaming support.

²⁹² The "home network" refers to the network of the subscriber's CMRS provider, whereas the "serving network" refers to the network of the roaming partner.

²⁹³ *CSRIC Enhanced Location Report* at 12. The ATIS/TIA J-STD-110 provides additional detail regarding the routing of SMS texts-to-911.

²⁹⁴ In contrast, a customer who places a voice call to 911 while roaming will have his or her call handled by the serving network. *See* TCS Second Further Notice Comments at 16. *See supra* Section III.B (describing routing of text-to-911 messages).

²⁹⁵ T-Mobile Second Further Notice Comments at 8-9 (footnotes omitted). *See also* RWA Second Further Notice Comments at 3; Sprint Second Further Notice Comments at 10; TCS Second Further Notice Comments at 16; Microsoft Second Further Notice Reply Comments at 6.

²⁹⁶ *See* TCS Second Further Notice Comments at 16-18; TruePosition Second Further Notice Comments at 9-10; CCA Second Further Notice Reply Comments at 7. These filings suggest that roaming solutions for interim SMS text-to-911 are feasible.

²⁹⁷ The potential solutions could provide important and substantial public safety benefits to roaming consumers. *See infra* Section IV.C, paras. 118-20.

²⁹⁸ RWA Second Further Notice Comments at 3.

²⁹⁹ CCA Second Further Notice Reply Comments at 7 (internal footnotes omitted). *See also* TCS Second Further Notice Comments at 17-18 (explaining the "hub-and-spoke" approach and suggesting that, under this model, "initial implementations with operators could start within six months, with full requirements within 18 months").

term roaming issues, and on any challenges associated with this approach.³⁰⁰ We also seek comment on whether this approach could be implemented within two years of the effective date of the adoption of final roaming rules. TCS claims that initial implementation of this approach could take place within six months, with full implementation within 18 months.³⁰¹

111. We also seek comment on the technical feasibility of other solutions. For example, we seek comment on the feasibility of modifying the current text-messaging protocol to provide that texts to 911 are handled by the serving network's TCC when a consumer is roaming.³⁰² Modifying the protocol would resolve the routing issue and enable the text to be sent to the appropriate PSAP. Sprint argues that treating text-to-911 as a "local 'break out' service" in this manner "would require changes in how SMS messages are routed and would involve changes to the SMS servers and likely to handsets as well."³⁰³ What changes to handsets are likely to be necessary, and could any such changes be implemented through an over-the-air software update? What SMS server changes would be necessary, and how quickly could these changes be implemented? We also seek comment on whether the serving network could either: (1) automatically include location information embedded in the message, which could then be used by the home network to route the text to the appropriate PSAP,³⁰⁴ or (2) otherwise communicate and coordinate location information with the home network through other means, such as by responding to a location query from the home network to provide the serving cell's location, rather than the serving cell's identification number.³⁰⁵

112. For each potential solution, we seek detailed and specific information on the potential technical hurdles associated with each step of the implementation process. We emphasize that we will not be persuaded by vague or unsupported arguments. We sought comment on supporting roaming for text-to-911 in our *Second Further Notice*, and as noted above, we made it clear that roaming is an important public safety consideration. We therefore reasonably expect that studies regarding support for text-to-911 while roaming should already be underway, if not completed, and we ask covered text providers to include detailed information regarding the results of such studies in their comments in this proceeding.

113. We also seek comment on the potential costs. We recognize that commenters generally do not support the adoption of roaming requirements for an interim SMS standard, arguing instead that we should refrain from such requirements while covered text providers focus their resources on next-generation networks and applications.³⁰⁶ We seek comment on whether requiring near-term investments

³⁰⁰ See, e.g., T-Mobile Second Further Notice Reply Comments at 9-10 (describing the difficulties associated with sharing cell database information and arguing that proposals that "roaming access is a simple matter of carriers negotiating among themselves or with a third party to share access to information and critical parts of the network" is "shortsighted and underscore the general lack of understanding of the complexity of these issues").

³⁰¹ TCS Second Further Notice Comments at 18.

³⁰² See TruePosition Second Further Notice Comments at 10, Sprint Second Further Notice Comments at 11.

³⁰³ Sprint Second Further Notice Comments at 11.

³⁰⁴ This approach would be facilitated by our proposed requirement to include enhanced location with texts-to-911 within a two-year timeframe, discussed above.

³⁰⁵ TruePosition Second Further Notice Comments at 10; Sprint Second Further Notice Comments at 12.

³⁰⁶ For example, T-Mobile asserts that "[g]iven the ongoing transition wireless networks to LTE and the native support in that standard for more robust text-to-911 features, the Commission should refrain from imposing any roaming mandates and instead support all stakeholders in their efforts to deploy next-generation networks." T-Mobile Second Further Notice Reply Comments at 10 (internal footnote omitted). See also Verizon Second Further Notice Reply Comments at 9 ("[A]llowing wireless providers to implement roaming and location capabilities through IP-enabled and standards-based global text telephony (GTT) services, or to leverage commercial LBS technologies, will help ensure that the Commission's actions do not hinder the transition to IP-enabled networks and services.").

to support SMS-based roaming for text-to-911 would delay the deployment of new wireless technologies that incorporate roaming capability and, if so, by what length of time. We also seek comment on T-Mobile's statement that wireless networks are transitioning to LTE, which has "native support . . . for robust text-to-911 features."³⁰⁷ Specifically, to what extent do LTE networks support roaming for text-to-911? In what timeframe could covered text providers support roaming, using an LTE network, on a nationwide basis?

114. We also seek comment on NENA's proposal that the Commission combine elements of two different approaches to "achieve the right balance of incentives to ensure that the current lack of roaming support is timely resolved, while facilitating, and preserving resources for, the IP and NG transitions."³⁰⁸ First, the Commission could encourage industry standards work and establish a "medium-term roaming capability requirement," tied to the development of necessary standards, for integrated text origination platforms.³⁰⁹ Second, the Commission could require roaming support for text-to-911 service "as a precondition to the turn-up of any IP-based replacement for current-generation integrated text platforms."³¹⁰ NENA also proposes that covered text providers may opt out of the medium-term deadline if they voluntarily commit to transition from their current generation platforms to NG911-compatible protocols and location mechanisms.³¹¹ Specifically, NENA proposes that the Commission "establish a three-year deadline (December 31st, 2017) for roaming support on existing platforms, extendable to five years (December 31st, 2019) for carriers who commit to supporting NG-compatible text service on a network-wide basis by that date."³¹² NENA contends that this timeframe "would better align with handset development cycles, encourage consumer adoption of more advanced handsets capable of leveraging the new texting platforms, and allow carriers additional time to recoup investments in their existing SMS platforms, which could continue to exist in parallel with newer platform for some time."³¹³ We seek comment on NENA's proposal, and whether this two-step approach would achieve near-term support for roaming for text-to-911 while encouraging deployment of next generation wireless networks that provide automatic location information while roaming. We also seek comment on whether NENA's proposed timeframes are reasonable and would encourage investment and standards work for roaming support. In order to qualify for the opt-out provision, should covered text providers be required to substantiate their voluntary commitment to transitioning to NG-compatible technology, such as by providing the Commission with a transition timeline and specific benchmarks that show how they will support roaming for text-to-911 by the end of 2019? What other factors should we consider in evaluating this approach?

115. Finally, we seek comment on whether CSRIC should be tasked with investigating roaming support for delivering texts to 911.³¹⁴ Several commenters suggest that it would be useful for CSRIC to examine roaming.³¹⁵ What specific technical approaches and standards for roaming support

³⁰⁷ T-Mobile Second Further Notice Reply Comments at 10, citing Verizon Second Further Notice Comments at 14.

³⁰⁸ NENA Second Further Notice Comments at 11.

³⁰⁹ *Id.*

³¹⁰ *Id.*

³¹¹ *Id.*

³¹² *Id.*

³¹³ *Id.* at 11-12.

³¹⁴ In its *Enhanced Location Report*, CSRIC indicates that it based the scope of its review on services provided pursuant to the Carrier-APCO-NENA Agreement. Because that agreement excludes the provision of text-to-911 while roaming, CSRIC's report similarly does not address roaming issues. *See CSRIC Enhanced Location Report* at 5-6.

³¹⁵ *See, e.g.*, Motorola Mobility Second Further Notice Comments at 6 ("to better understand the challenges and feasibility of providing text-to-911 while roaming, the Commission should consider submitting the issue to the next iteration of the CSRIC."); AT&T Second Further Notice Comments at 6 ("[t]he Commission should "work with . . .

should we task CSRIC with examining? What additional information could we expect from CSRIC that could not be provided by commenters that could help facilitate our decision-making process?

116. *International Roaming.* As we noted in the *Second Further Notice*, due to the limitations of the current ATIS/TIA J-STD-110 standard, significant changes to the SMS text platform would be necessary to handle roaming internationally.³¹⁶ The comments indicate that international roaming present unique challenges to implement text-to-911 for consumers roaming on CMRS networks in the United States.³¹⁷ Motorola Mobility asserts that international roaming “often involves a distinct set of technological processes and economic transactions than domestic roaming”³¹⁸ Motorola Mobility suggests that “any roaming requirements . . . should, like the 911 rules as a whole, be limited to equipment manufactured or imported for sale in the United States.”³¹⁹ We seek comment on this suggestion. Also, we seek comment on the role of U.S. standards bodies in coordinating with international standards organizations. Are U.S. standards bodies working on an international roaming standard for LTE networks as part of the IP transition? Are ATIS and similar standards groups addressing international roaming in the context of their standards work on MMES? What would be the costs for covered text providers, OS providers, and other relevant stakeholders to support of international roaming for text-to-911 in the U.S.?

C. Cost-Benefit Analysis for Enhanced Location and Roaming

117. In the *Second Report and Order*, we examine the overall benefits compared to the costs of a requirement for covered text providers to deliver 911 text messages. In assessing the benefits of the requirement, we stress that a universal capability to send 911 text messages can provide substantial, quantifiable public safety benefits to the disabilities community and to the public at large.³²⁰ In this *Third Further Notice*, we seek comment on the public safety benefits and improvements that our proposed enhanced location information and roaming requirements will provide, compared to the costs of meeting such requirements.

118. In particular, we seek comment on the extent to which the improvements proposed herein would result in tangible benefits with respect to safety of life and property compared to the costs of providing the best available location that covered text providers could obtain from any available location technology or technologies. We believe that enhanced location and a nationwide roaming capability will assist public safety entities in dispatching first responders more expeditiously and directly to the scene of emergencies, thereby saving lives. We seek quantitative data on this issue.

119. We acknowledge that quantifying the benefits and burdens for delivering enhanced location and roaming support for texts to 911 is potentially difficult. However, we anticipate that the proposed requirements will further contribute to the broad benefits of text messages to 911. We believe that our proposed requirements will enable public safety entities to better respond to texted requests for emergency assistance. Moreover, the roaming requirement will expand the benefits of text-to-911 to more consumers – those traveling beyond their home service area or those who may not realize they are roaming when their text-capable device is attached to a cell sector of their CMRS provider’s roaming

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its own advisory committee to address the long-term solution to the roaming for Text-to-911” as well as industry standards setting bodies); CCA Second Further Notice Reply Comments at 6 (“Rather than unilaterally imposing requirements for text-to-911 while roaming, the Commission should instead allow these issues to be investigated by industry and standards setting bodies—perhaps by the next iteration of CSRIC.”).

³¹⁶ *Second Further Notice*, 29 FCC Rcd at 1566 ¶ 50 n.99.

³¹⁷ Motorola Mobility Second Further Notice Comments at 6.

³¹⁸ *Id.*

³¹⁹ *Id.*

³²⁰ *See supra* Section III.A.1.a.

partner. We therefore expect the proposed requirements to provide an additional level of benefits beyond the estimated “benefits floor” of \$63.7 million for the text-to-911 requirements adopted by the *Second Report and Order*.³²¹ We seek comment on the increased value and benefits for providing more accurate location information enhanced location and a roaming capability with text messages to 911.

120. Further, we seek comment on the extent to which the generally recognizable benefits of the proposed requirements can be quantified with respect to the safety of life and property. In its pending E911 Location Accuracy proceeding, the Commission analyzed a 2013 study of the Salt Lake City, Utah area and derived from the study’s relevant data an annual benefit of approximately \$92 billion, based on an estimate that improvements in location accuracy for wireless 911 voice calls could save approximately 10,120 lives annually.³²² We seek comment on whether our analysis and underlying assumptions are relevant to similarly quantifying the benefits of more granular location information and a roaming capability for text messages to 911.³²³

121. We recognize that implementing the proposed location and roaming requirements will impose costs on covered text providers. We seek detailed information on all of the costs covered text providers estimate the proposed enhanced location and roaming requirements would impose, including how these costs were determined. We seek comment on what universal costs would be necessary across all enhanced location and roaming technologies, as well as on any specific costs that are unique to the solutions that covered text providers may choose to implement. For instance, if covered text providers choose to use CMRS-based solutions using the SMS text-to-911 platform to meet the proposed requirements, we seek quantitative cost data for any possible modifications to the J-STD-110 and for the SMS text-to-911 platform in the near-term, e.g., the next five years. We also request similarly detailed and quantitative data on the costs to implement enhanced location and roaming capabilities for LTE or other IP-based networks. Does the recent and ongoing the implementation of LTE networks result in the long run in lower overall cost levels, compared to the costs of changes to the SMS text-to-911 platform and of stranding investment in that current platform?³²⁴

122. We also seek comment regarding the specific costs providers of interconnected text

³²¹ See *supra*, Sec.III.A.1.a.iv, para. 20 n.65 (explaining that the estimate reflects the Commission’s discounting of the expected number of lives saved from text-to-911 by roughly half). See also *Further Notice*, 27 FCC Rcd at 15688 ¶ 71 n. 177 (for the underlying assumption that “in half the cases the disabled person could rely on a speaking person to make the 911 call. This is a conservative assumption, because it assumes that a disabled person never saves a life by using text-to-911 to help a non-disabled cardiac victim.”).

³²² See *E911 Location Accuracy Third Further Notice*, 29 FCC Rcd 2374, 2388-89, ¶ 33 & nn.70, 71 (citing Wilde, Elizabeth Ty, “Do Emergency Medical System Response Times Matter for Health Outcomes?,” 22 *Health Econ.* 7, pp. 790-806 (2013), available at <http://www.ncbi.nlm.nih.gov/pubmed/22700368> (last accessed July 9, 2014) (*Salt Lake City Study*). The study found from 2001 data of 73,706 emergency incidents that a one-minute increase in response time caused annual mortality to increase 17 percent, i.e., an increase of 746 deaths, from a mean of 4,386 deaths to 5,132 deaths. Because the study’s regression analysis was linear, the Commission inferred from the results the life-saving impact of reducing the number of deaths by 746 due to a one minute decrease in response time and sought comment on its analysis. The Commission assumed that, if this outcome is reasonably reflective of the country as a whole, the proposed location accuracy improvements could save approximately 10,120 statistical lives annually. See *E911 Location Accuracy Third Further Notice*, 29 FCC Rcd at 2388-89 n. 71-72 (providing a discussion of the Commission’s assumptions and additional calculations).

³²³ For example, assuming, as for the above estimated benefits floor of \$63.7 million, that the number of expected lives saved by text-to-911 would be half of the number of expected lives saved for wireless voice 911 calls, we estimate an annual benefit of \$46 billion provided by 911 text messaging with enhanced location information. We reach the \$46 billion estimate by halving the Commission’s estimate of 10,120 statistical lives saved nationwide, based on the 2013 Salt Lake Study, and multiplying that number (5,060 statistical lives) by the VSL figure of \$9.1 million. See *supra* Section III.A.1.a.iv, para. 20, n. 65.

³²⁴ See, e.g., Motorola Mobility Second Further Notice Comments at 3-4 (cautioning that mandates for functionalities beyond what J-STD-110 currently provides for “could change cost calculation[s] significantly”).

messaging applications may incur to resolve the technical complexities in delivering enhanced location and to meet the proposed roaming requirement. To the extent those costs may vary depending on the approaches that an interconnected text provider chooses, we seek quantitative cost information on these different approaches.³²⁵ Further, what other potential costs, if any, to interconnected text providers should the Commission consider? Since many interconnected text providers offer their services at no charge and they may incur significant costs to implement text-to-911, will interconnected text providers have to charge for these services, or are there other ways to obtain revenues to cover those costs? Finally, we seek comment on any additional costs or burdens that covered text providers may incur as a result of our proposed requirements.

D. Future Texting Services

123. *Scope of text-to-911 service and requirements.* In this proceeding, we believe that a forward-looking view of text messaging services, encompassing all text-capable media, is necessary to ensure continued access to emergency services as covered text providers migrate from legacy 911 networks to an all-IP environment.³²⁶ The limitations of SMS-based text-to-911, made clear in the record and described above, underscore the need for further development of platform architectures and standards that can deliver enhanced location and support roaming with text-to-911. In the *Second Further Notice*, we noted that as the many varieties of text messaging – including OTT text messaging applications – continue to grow in popularity, we expect consumer habits and expectations to change.³²⁷ As new text messaging platforms are deployed, and to ensure that all consumers can reach 911 by sending a text message, we seek comment on our ultimate goal that text-to-911 be available on all text-capable media, regardless of the transmission method (*e.g.*, whether texts are delivered by IP or circuit-switched networks).

124. There is support in the record for a more expansive scope of our text-to-911 requirements. NASNA contends that the Commission’s rules “should apply to all text applications capable of texting to 911, regardless of the technology used.”³²⁸ NENA emphasizes that, to ensure that future text users can be located in an emergency, the Commission should clarify that “NG9-1-1 location determination and transmission obligations will eventually apply to access network providers and text originating service providers, respectively.”³²⁹ Further, comments in response to the *Second Further Notice* indicate that consumers’ expectations regarding the availability text-to-911 are likely to increase as covered text providers implement and offer new text messaging services.³³⁰ In further addressing these

³²⁵ See *supra* Section IV.A, paras. 86-90 (concerning enhanced location) and Section IV.B, paras. 110-11 (concerning TCS’s and other possible approaches to support roaming).

³²⁶ See Technology Transitions, GN Docket No. 13-5, GN Docket No. 12-353, WC Docket No. 10-90, CG Docket No. 10-51, CG Docket No. 03-123, WC Docket No. 13-97, *Order, Report and Order, and Further Notice of Proposed Rulemaking, Report and Order, Order and Further Notice of Proposed Rulemaking, Proposal for Ongoing Data Initiative*, 29 FCC Rcd 1433 (2014).

³²⁷ *Second Further Notice*, 29 FCC Rcd at 1566 ¶ 64.

³²⁸ NASNA Second Further Notice Comments at 9. See also BRETSA Second Further Notice Comments at 7 (urging the Commission to “establish 9-1-1 compatibility as a design criteria—not just for texting technologies—but for any communications service to be authorized by Commission Rules, or to be provided over a Commission-licensed service”); NENA Second Further Notice Comments at 15 (“Over the long term, all text messaging applications should support Text-to-9-1-1.”).

³²⁹ NENA Second Further Notice Reply Comments at 6.

³³⁰ See *Second Further Notice*, 29 FCC Rcd at 1570 ¶ 64 (observing the growth in popularity of text messaging applications and seeking comment on consumer expectations as “the functionality of these applications” changes). See BRETSA Second Further Notice Reply Comments at 2 (“As use of services or applications for communications become more common, consumers are more likely to expect that those services will enable them to communicate with 9-1-1.”); TCS Second Further Notice Comments at 20-21 (stating that a “consumer has expectations that his communication services” will have access to “the public safety infrastructure” when “such access is critical, and

(continued....)

issues, we seek comment below on the following matters: (1) 911 text messages delivered over Wi-Fi and non-CMRS networks; (2) non-interconnected text applications; (3) rich media services, including texts, video, photos, and the like; (4) real-time text communications; and (5) telematics and potentially additional public safety services.

125. *Location Information for Wi-Fi Enabled Devices.* In the above *Second Report and Order*, we exclude 911 text messages that come from Wi-Fi only locations from the scope of the requirements at this time.³³¹ In view of the record and recent trends suggesting the growth in the use of Wi-Fi generally,³³² we believe that the public interest warrants further exploration of the feasibility of sending 911 text messages over non-CMRS networks. For instance, CMRS providers migrating to 4G LTE networks have network traffic and engineering incentives to off-load their subscriber traffic on to Wi-Fi networks that are connected to wired broadband connections, such as those provided by cable or telephone companies. The Commission's *Sixteenth Mobile Wireless Competition Report* observed that the large demand for wireless data by mobile users at public locations has been inducing CMRS providers to reduce congestion on their mobile wireless networks,³³³ and that the forecast for total mobile data traffic offload from CMRS mobile wireless networks to wireless local area networks (WLANs),³³⁴ which primarily use Wi-Fi technology will increase from 11 percent (72 petabytes/month) in 2011 to 22 percent (3.1 exabytes/month) in 2016.³³⁵

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“[c]onsumers expect that both direct and indirect text messaging services will have the ability to connect to text-capable telephone numbers.”); Heywire Second Further Notice Comments at 9 (with different text messaging applications, “the average person will not understand why Text-to-911 works for some applications and not others”). See generally NASNA Second Further Notice Comments at 10 (implying that consumer expectations may increase but suggested that a consumer survey be conducted). But see Twilio Second Further Notice Comments at 12 (asserting that consumers are less likely to expect to use non-interconnected OTT text messaging applications, which “do not replace native texting or calling applications,” to reach emergency service).

³³¹ See *supra* Section III.A.2.a, para. 35 n. 96.

³³² See textPlus Comments at 2 (stating that “approximately 85% of the time textPlus users connect to the Internet via Wi-Fi” and that “a small minority of users access the textPlus app via a traditional CMRS 3G, 4G or LTE data network when outside of a known or public Wi-Fi zone”). See also *Sixteenth Report*, 28 FCC Rcd at 3933 ¶ 373 (reporting that “an estimated 40 percent of mobile wireless usage occurring in the home [is data usage],” and that there is a “large demand for wireless data by mobile users sojourning at public locations”), citing W. Gerhardt and R. Medcalf, “Femtocells: Implementing a Better Business Model to Increase SP Profitability,” Cisco (Mar. 2010).

³³³ *Sixteenth Report*, 28 FCC Rcd at 3933 ¶ 373 (describing the increased demand in data traffic as giving “incentives for service providers to find means, potentially intermodal, to reduce congestion on their mobile wireless networks”).

³³⁴ *Sixteenth Report*, 28 FCC Rcd at 3934, ¶¶ 375-76 (describing WLANs “as operating on an unlicensed basis and provide high-speed (fixed) wireless Internet connections within a range of 150 to 250 feet from a wireless access point”). Manufactured in accordance with the IEEE 802.11, Wi-Fi equipment to access the internet includes various devices, e.g., wireless handsets, notebook and netbook computers, tablets, portable electronic games, media players, e-readers, televisions, and cameras. See *id.* Accessed through telecommunication cables or cellular networks, WLAN networks are “deployed by mobile wireless companies, cable companies, businesses, universities, municipalities, households and other institutions.” See *id.* at ¶ 377. Another small and local wireless network technology uses CMRS-licensed spectrum by deploying femtocells, picocells, metrocells, and microcells. A small cell is a small, low-power wireless base station that functions like a cell in a mobile wireless network and provides “improved cellular coverage, capacity and applications for homes and enterprises as well as metropolitan and rural public spaces.” See *id.* at 3934 ¶ 375; 3937-38 ¶ 384.

³³⁵ See *Sixteenth Report*, 28 FCC Rcd at 3936 ¶ 380, citing Cisco white paper, “Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011–2016” (Feb. 5, 2014), at 12, available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html (last accessed July 1, 2014). See also 4G Americas, “Mobile Broadband Explosion, The 3GPP Wireless Evolution” (2012), at 11-12 (Wi-Fi networks provide a means for: (1) “offloading heavy traffic” from LTE networks “as the number of Wi-Fi hotspots increases”; (2) “add[ing] capacity” by using unlicensed spectrum; and (3) achieving “high

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126. We seek comment on the feasibility of sending text messages to 911 via Wi-Fi networks and on the ability of covered text providers to route those texts to the proper PSAP and provide granular location data. Public safety commenters support moving ahead on evaluating location solutions that could route text-to-911 messages using Wi-Fi networks only.³³⁶ NENA suggests that the Commission's medium- to long-term focus on text-to-911 should take a general approach that would address "emerging technologies such as WiFi positioning."³³⁷

127. The record includes contrasting views. For example, Heywire submits that the technical issues will require "substantial development" to address matters ranging from "the mobile devices themselves" to the "validity of the identification" of individuals who use text-to-911 on Wi-Fi only devices.³³⁸ Similarly, VON Coalition contends that "[i]n a Wi-Fi-only environment there is a lack of reliable location information and no reliable way for the text to be routed."³³⁹ In contrast, TCS submits that "[a]dvances in the user plane protocol enable" location techniques, including Wi-Fi and Bluetooth, that are not dependent on the macro cellular network.³⁴⁰ Also, Bandwidth describes two options for location capability with text-to-911 through Wi-Fi service: (1) "platform-derived location options," querying a database of Wi-Fi hotspots, and knowing the Wi-Fi router locations,³⁴¹ and (2) "off-platform services," available to application developers ... that use hybrid positioning technology to determine a consumer's location.³⁴² We seek comment on the approaches suggested by TCS and Bandwidth, as well as any other potential solutions.

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frequency re-use"), available at
<http://www.4gamericas.org/documents/4G%20Americas%20Mobile%20Broadband%20Explosion%20August%200121.pdf> (last accessed June 27, 2014).

³³⁶ BRETSA contends that "any CMRS or WiFi/Internet capable communications device should be required to include location and text-messaging functionality." BRETSA Second Further Notice Comments at 22 ("This requirement should apply regardless of whether the text messaging application is an SMS text messaging application."). BRETSA adds that this requirement should apply whether the connections are over the CMRS network to the PSTN or over "the publicly accessible Internet." BRETSA Second Further Notice Comments at 27. Also, BRETSA asserts that, in the "transition to LTE-IMS, wireless systems will provide emulated SMS messaging over a data channel rather than true SMS messaging over a control channel," resulting in the loss of additional coverage area. *See id.* at 40. We seek comment on how the deployment of LTE networks by CMRS providers will affect their text messaging coverage areas.

³³⁷ NENA Second Further Notice Comments at 9.

³³⁸ Heywire Second Further Notice Comments at 2.

³³⁹ VON Coalition Second Further Notice Comments at 5 (explaining that "[e]ven when [Wi-Fi] services are enabled, they may not function" due to a weak signal, or "lack of resolution or accuracy" that would be useful to a PSAP). VON Coalition also submits that, "for privacy reasons," consumers may opt to disable the GPS or other location capability" on their Wi-Fi enabled devices. *Id.* (adding that consumers may also disable the location capability to extend battery life).

³⁴⁰ TCS Second Further Notice Comments at 15 (suggesting that the Open Mobile Alliance's (OMA) secure user plane protocol enables Phase II location either "via interworking" or "completely off network" and that the Indoor Location Alliance is evaluating "non-cellular-based location techniques").

³⁴¹ Bandwidth Second Further Notice Reply Comments at 10 (adding that "Apple operates such a database for use by platforms it supports and makes this platform-derived location information available to all hosted applications").

³⁴² Bandwidth Second Further Notice Reply Comments at 10-11 (describing hybrid positioning as incorporating Wi-Fi, GPS, cell towers, IP address and device sensor information). Bandwidth states that Skyhook Wireless "provides a software developer's toolkit that enables any application to determine its location." *Id.* at 10. Also, Bandwidth notes that Skyhook's location determination is "only 1 second in most cases," citing Liljegren, R., *et al.*, "Performance Evaluation of the Skyhook Wireless Positioning System," IT University of Copenhagen (Fall 2010), available at <https://blog.itu.dk/SPVC-E2010/files/2011/08/11skyhookperformace.pdf> (last accessed July 24, 2014).

128. *Non-interconnected text applications.* Additionally, the *Second Further Notice* sought comment on non-interconnected text applications that only support communications between a defined set of users, but do not support general communication with all or substantially all North American Numbering Plan numbers. The record shows support for addressing consumer expectations with respect to the use of such non-interconnected text applications. For instance, TCS submits that an interconnected text provider that offers a service that sends and receives text messages “between essentially any data-capable device should be required to fulfill the same 9-1-1 obligations as an OTT provider that provides such a service via one interface.”³⁴³ Heywire observes that the differences between an interconnected versus non-interconnected application are not understood by the average person, and that further confusion arises with non-interconnected text providers using the consumer’s mobile phone number for identification purposes or “sending an ‘authorization’ SMS message” to the consumer’s mobile device.³⁴⁴ We seek comment on the appropriate approach to address non-interconnected text services – whether through voluntary commitments or by extending the text-to-911 rules we adopt today. We also seek comment generally on the scope of non-interconnected text applications that should be covered by any requirements. Should text-to-911 requirements address non-interconnected text providers offering services to consumers who participate in social media or choose to use applications that enable texting within an affinity group but that do not use NANP numbers? What could the Commission do to encourage rather than require relevant stakeholders to implement the text platforms and technologies necessary to achieve text-to-911, and in what timeframe? What standards are being developed or would have to be adopted to allow stakeholders to implement text-to-911 on all text-capable media on a technologically neutral basis?

129. We also seek comment on what bases of authority the Commission has that are sufficient for us to extend the scope of our text-to-911 requirements. VON Coalition opposes regulations that would apply to non-interconnected text services, especially services that “only permit users to text other users of the same service.”³⁴⁵ Additionally, the *Second Further Notice* sought comment on non-interconnected applications that only support communications between a defined set of users, but do not support general communication with using North American Numbering Plan numbers.³⁴⁶ The record shows support for addressing consumer expectations with respect to the use of such non-interconnected text applications.³⁴⁷ Twilio argues that “[a]ttempting to regulate across all OTT applications that allow for text messaging is simply not practicable, and likely beyond the Commission’s jurisdiction.”³⁴⁸ ITIC contends that this proceeding should not include text applications that “only allow consumers to communication with other users running the same application.”³⁴⁹ VON Coalition generally asserts that “[a]ny requirement that [non-interconnected] OTT text providers use such services . . . would violate the CVAA, and exceed the Commission’s authority thereunder.”³⁵⁰ We seek comment on whether the legal

³⁴³ TCS Second Further Notice Comments at 20.

³⁴⁴ Heywire Second Further Notice Comments at 9.

³⁴⁵ VON Coalition Second Further Notice Comments at 3 (adding that such services “require both the sender and recipient to download and register specialized software to use the service”). *See also* ITIC Second Further Notice Comments at 3 (contending that the Commission “should not address non-interconnected text applications that do not interconnect with the PSTN or an SMS network”).

³⁴⁶ *Second Further Notice*, 29 FCC Rcd at 1566 ¶ 64.

³⁴⁷ VON Coalition Second Further Notice Comments at 3.

³⁴⁸ Twilio Second Further Notice Comments at 12 (adding that “given the wide variety of ways these OTT applications allow their users to communicate via text, it would be incredibly difficult to clearly define which applications must provide text-to-911 capabilities”).

³⁴⁹ ITIC Second Further Notice Comments at 3 (footnote omitted).

³⁵⁰ VON Coalition Second Further Notice Comments at 10; *see also id.* at 9 (asserting that “Section 3 of the CVAA requires that no rule created under it require the use of proprietary technology”).

authority set forth in the *Second Report and Order* would also support extending text-to-911 obligations to non-interconnected text providers. Alternatively, does the Commission have adequate bases of authority to require non-interconnected text providers to provide a bounce-back message that text-to-911 service to 911 not available? VON Coalition suggests that the Commission should recommend that non-interconnected text providers “notify customers in their terms of use that texting 911 is not available” but refrain from imposing requirements on such providers.³⁵¹ We seek comment on VON Coalition’s view.

130. We also seek comment on the technical feasibility for non-interconnected text messaging providers to deliver texts-to-911.³⁵² Bandwidth asserts that because the “application-centric model” posed in the *Second Further Notice* “does not depend on the 10-digit number assigned to the underlying communications device,” that model would “technically allow for the possible expansion of text-to-911 requirements to include non-interconnected OTT application providers in the future.”³⁵³ Heywire suggests that the CMRS-based model would be feasible for non-interconnected text providers as well as interconnected text providers.³⁵⁴ We seek comment on these proposals. What costs would non-interconnected text providers incur to comply with requirements to provide either text-to-911 or a bounce-back message?

131. *Rich media text services.* We also seek comment on the delivery of multimedia messages to PSAPs.³⁵⁵ As briefly described above,³⁵⁶ both MMS and MMES provide the capability to send multimedia, including photos and videos, in addition to text. We seek comment on PSAP implementation of multimedia messaging services and how the delivery of multimedia could affect PSAPs. Are PSAPs concerned regarding the amount of multimedia information they may receive? Currently, certain covered text providers remove non-text content and non-911 addresses from a MMS before delivery to the PSAP.³⁵⁷ Verizon adds that the “potential for PSAP and consumer confusion” can arise “in various scenarios associated with MMS,” and that the Commission should “allow industry and public safety stakeholders to address issues concerning non-voice and non-text content in the context of NG911 systems and IP-enabled originating networks.”³⁵⁸ Verizon contends that if the Commission intends to regulate messages delivered as MMS, it will need to provide “the opportunity to resolve the technical issues in a consistent, standard way, and to address the potential for consumer confusion.”³⁵⁹ ATIS urges that “industry begin its technical evaluation quickly,” because users today connect to CMRS and Wi-Fi networks “at the same time to run SMS-like applications,” including “sophisticated applications that

³⁵¹ VON Coalition Second Further Notice Comments at 3, n.10 (asserting specifically that its suggestion applies to non-interconnected text providers offering service only to users texting each other on the same service).

³⁵² See *supra*, Section IV.D, paras. 125-127 (discussing technical issues associated with providing location information for texts-to-911 using Wi-Fi only services).

³⁵³ Bandwidth Second Further Notice Comments at 3. See also Heywire Second Further Notice Comments at 2 (concerning the capability of the CMRS based network model to enable text-to-911 messaging by non-interconnected text providers).

³⁵⁴ Heywire Second Further Notice Comments at 2.

³⁵⁵ The text portion of text-to-911 message initiated using an MMS or other text messaging platform must be transmitted to the PSAP pursuant to our requirements set forth in the *Second Report and Order*. In this section, we discuss the inclusion of rich media, including images, video, and the like.

³⁵⁶ See *supra* Section IV.A, paras. 94-95; notes 1 and 85.

³⁵⁷ Verizon Second Further Notice Comments at 12.

³⁵⁸ *Id.* (describing the “significant risk of confusion for the 911 caller (who is receiving texts from someone other than the PSAP) and the PSAP (who is receiving non-911 texts from someone who may not be in danger or even in the same jurisdiction)”). Verizon further implies that messages to 911 could easily be sent to more than one addressee with either many or no attachments. See *id.*

³⁵⁹ Verizon Second Further Notice Comments at 12.

incorporate texting with other multimedia capabilities.”³⁶⁰ We seek comment on these industry views. We also seek comment on what factors public safety entities must consider before they can efficiently handle text, photos, and video from whatever multimedia technologies covered text and other service providers choose to deploy. What best practices are being developed as more PSAPs implement IP-based or NG911 capabilities? Do regional or virtual PSAPs provide efficiencies to filter the flow of multimedia messages to 911, especially in disasters or other critical circumstances? Should the Commission impose requirements on covered text providers to restrict multimedia information to PSAPs? What cybersecurity concerns might multimedia messages introduce for covered text providers and PSAPs? We seek comment generally on the promise and potential of media-rich text messaging services, and how soon those capabilities will be realized.

132. *Real-Time Text.* Further, we seek comment on the delivery of real-time text communications to PSAPs, wherein the text is transmitted as it is typed.³⁶¹ The EAAC recommended that “standards and functional requirements be adopted that are technically and economically feasible” to achieve direct access to 911 using, among other IP-based text communications, real-time text communications.³⁶² We note that real-time text differs from traditional forms of text communications such as SMS, in that it provides an instantaneous exchange, character by character or word by word, whereas SMS and other traditional forms of text communications require users to finish their typed message before sending it. According to the Rehabilitation Engineering Research Center for Telecommunications Access (RERC-TA), in an emergency, real-time text can allow for interruption and reduce the risk of crossed messages because the PSAP call taker is able to read the caller’s message as it is being typed, rather than waiting until the caller presses the “send” key.³⁶³

133. *Telematics and additional public safety services.* Telematics services offer a number of public-safety oriented services, including automatic crash notification (ACN), navigation, concierge, and diagnostic features. Until recently, these telematics services have not offered texting capability.³⁶⁴ Telematics services have now evolved, however, to enable text messaging over SMS platforms or platforms incorporating the ability to connect with LTE networks, either through device toggling or through a voice-to-text recognition capability in the telematics device embedded in the architecture of vehicles. We seek comment on the capabilities of telematics services devices to enable consumers to use text messaging to reach 911 services other than through the telematics call centers. For instance, we note that telematics-connected “docks” in vehicles can enhance the capabilities of smart phones to access telematics services. Additionally, we recognize that 911-only mobile devices and certain alarm services using either CMRS data or Wi-Fi networks have also evolved to incorporate new capabilities that can include 911-specific text messaging.

³⁶⁰ ATIS Second Further Notice Comments at 2-3.

³⁶¹ EAAC Survey Report at 23. 3,149 survey takers were asked to select one or more texting options preferred for contacting 911. The top two selections were real-time text (1,226 or 45.7%) and SMS (1,210 or 45.1%). EAAC Report and Recommendations at 22 and 24 recommends mandating real-time text as one of the texting options to enable direct access to PSAPs. *Also see* EAAC Report on Interim Text Messaging (March 1, 2013) at 5.

³⁶² *See* CVAA § 106(c)(8). *See also supra* Section III.A.1.a.iii, para. 17, n. 54, and EAAC Report and Recommendations at 22.

³⁶³ Rehabilitation Engineering Research Center for Telecommunications Access, Proposal R1 for Implementation of Real-Time Text Across Platforms Version 2.0 (Dec. 2013) at 8, *available at* <http://trace.wisc.edu/docs/2008-RTT-Proposal> (last accessed July 15, 2014). The RERC-TA explains that crossed messages occur when one party sends a second message before the other party finishes answering the first. They go on to explain that in an emergency, a panicked caller sometimes asks a second or third question when there is no immediate visible response from the 911 call-taker, and this can lead to confusion, crossed answers, and error in responses.

³⁶⁴ *See* Revision of the Commission’s Rules to Ensure Compatibility With Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, IB Docket No. 99-67, *Report and Order and Second Further Notice of Proposed Rulemaking*, 18 FCC Rcd 25340, 25367-78, ¶¶ 64-90 (2003).

134. We request comment on whether the Commission should extend the scope of text-to-911 requirements to apply to public safety-oriented telematics services that include text capability. What expectations do consumers have in reaching PSAPs directly, using such telematics services, rather than through a third-party call center? What sources of jurisdictional authority does the Commission have to adopt text-to-911 requirements for such telematics services? What are the costs and benefits of including these services within the scope of the text-to-911 requirements for the purposes of providing enhanced location information or routing the emergency text-to-911 message to the appropriate PSAP?

V. PROCEDURAL MATTERS

A. *Ex Parte* Presentations

135. The proceedings initiated by the *Third Further Notice of Proposed Rulemaking* shall be treated as a “permit-but-disclose” proceedings in accordance with the Commission’s *ex parte* rules.³⁶⁵ 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.

B. Comment Filing Procedures

136. 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 *Third 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.

³⁶⁵ 47 C.F.R. §§ 1.1200 *et seq.*

- 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

137. 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

138. As required by the Regulatory Flexibility Act of 1980, *see* 5 U.S.C. § 604, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) and an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules adopted and proposed in this document, respectively. The FRFA is set forth in Appendix C. The IRFA is set forth in Appendix D. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments filed in response to this *Second Report and Order and Third 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

139. The *Second Report and Order* contains new information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law No. 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the new information collection requirements contained in this proceeding.

140. The *Third 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 2002,³⁶⁶ we seek specific comment on how we might “further reduce the information collection burden for small business concerns with fewer than 25 employees.”³⁶⁷

141. We note that pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), we previously sought specific comment on how the Commission might “further reduce the information collection burden for small business concerns with fewer than 25 employees.”³⁶⁸ In addition, we have described impacts that might affect small businesses, which includes most businesses with fewer than 25 employees, in the FRFA in Appendix B, *infra*.

³⁶⁶ Pub. L. No. 107-198.

³⁶⁷ 44 U.S.C. § 3506(c)(4).

³⁶⁸ *See Second Further Notice of Proposed Rulemaking*, 29 FCC Rcd at 1575, Appendix B.

F. Congressional Review Act

142. The Commission will send a copy of this *Second Report and Order and Third 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).

VI. ORDERING CLAUSES

143. Accordingly, IT IS ORDERED, pursuant to Sections 1, 2, 4(i), 4(j), 4(o), 251(e), 303(b), 303(g), 303(r), 316, and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 154(j), 154(o), 251(e), 303(b), 303(g), 303(r), 316, 403, and Section 4 of the Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, Sections 101 and 201 of the New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, and Section 106 of the Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 47 U.S.C. §§ 615a, 615a-1, 615b, 615c, that the *Second Report and Order and Third Further Notice of Proposed Rulemaking* in PS Docket No. 11-153 and PS Docket No. 10-255 IS ADOPTED and shall become effective thirty (30) days after publication of the text or summary thereof in the Federal Register, except for those rules and requirements that require approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act, which shall become effective after the Commission publishes a notice in the Federal Register announcing such approval and the relevant effective date.

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

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

For the reasons discussed in the Second Report and Order, the Federal Communications Commission amends 47 C.F.R. Part 20 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), 201(b), 225, 301, 303(b), 303(g), 303(r), 316, 403, 615a, 615a-1, 615b, and 47 U.S.C. § 615c.

2. Section 20.18 is amended by adding paragraphs (n)(9) through (11) to read as follows:

§20.18 911 Service.

* * * * *

(n) * * *

(9) *911 text message.* A 911 text message is a message, consisting of text characters, sent to the short code “911” and intended to be delivered to a PSAP by a covered text provider, regardless of the text messaging platform used.

(10) *Delivery of 911 text messages.*

(i) 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 obtain location information sufficient to 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 covered text provider of that change. All covered text providers using device-based location information that requires consumer activation must clearly inform consumers that they must grant permission for the text messaging application to access the wireless device’s location information in order to enable text-to-911. If a consumer does not permit this access, the covered text provider’s text application must provide an automated bounce-back message as set forth in paragraph (n)(3) of this section.

(ii) Covered text providers must begin routing all 911 text messages to a PSAP by June 30, 2015, or within six months of the PSAP’s valid request for text-to-911 service, whichever is later, unless an alternate timeframe is agreed to by both the PSAP and the covered text provider. The covered text provider must notify the Commission of the dates and terms of the alternate timeframe within 30 days of the parties’ agreement.

(iii) *Valid Request* means that:

(A) The requesting PSAP is, and certifies that it is, technically ready to receive 911 text messages in the format requested;

(B) The appropriate local or State 911 service governing authority has specifically authorized the PSAP to accept and, by extension, the covered text provider to provide, text-to-911 service; and

(C) The requesting PSAP has provided notification to the covered text provider that it meets the foregoing requirements. Registration by the PSAP in a database made

available by the Commission in accordance with requirements established in connection therewith, or any other written notification reasonably acceptable to the covered text provider, shall constitute sufficient notification for purposes of this paragraph.

(iv) The requirements set forth in paragraphs (n)(11)(i) through (iv) do not apply to in-flight text messaging providers, MSS providers, or IP Relay service providers, or to 911 text messages that originate from Wi-Fi only locations or that are transmitted from devices that cannot access the CMRS network.

(11) *Access to SMS networks for 911 text messages.* To the extent that CMRS providers offer Short Message Service (SMS), they shall allow access by any other covered text provider to the capabilities necessary for transmission of 911 text messages originating on such other covered text providers' application services. Covered text providers using the CMRS network to deliver 911 text messages must clearly inform consumers that, absent an SMS plan with the consumer's underlying CMRS provider, the covered text provider may be unable to deliver 911 text messages. CMRS providers may migrate to other technologies and need not retain SMS networks solely for other covered text providers' 911 use, but must notify the affected covered text providers not less than 90 days before the migration is to occur.

APPENDIX B

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), 201(b), 225, 301, 303(b), 303(g), 303(r), 316, 403, 615a, 615a-1, 615b, and 47 U.S.C. § 615c.

2. Section 20.18(n) is amended by adding new paragraphs (n)(12) and (13) to read as follows:

§20.18 911 Service.

* * * * *

(n) * * *

(12) *Enhanced location for 911 text messages.* Covered text providers subject to this section must provide the designated Public Safety Answering Point enhanced location, *i.e.*, the best available location that covered text providers can obtain from any available location technology or combination of technologies, with 911 text messages no later than two years from the effective date of this rule.

(13) *Roaming.* Covered text providers subject to this section must support roaming for 911 text messages no later than two years from the effective date of this rule.

* * * * *

APPENDIX C

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA)¹ the Commission incorporated an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the *Second Further Notice of Proposed Rulemaking (Second Further Notice)*. No comments were filed addressing the IRFA regarding the issues raised in the *Second Further Notice*. Because the Commission amends the rules in this *Second Report and Order*, the Commission has included this Final Regulatory Flexibility Analysis (FRFA). This present FRFA conforms to the RFA.²

A. Need for, and Objectives of, the Adopted 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 CMRS provider-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 Report and Order*, we adopt rules that set timeframes that will enable Americans to send text messages to 911 (text-to-911) across platforms. Specifically, we require all CMRS providers and providers of interconnected text messaging applications (collectively, “covered text providers”)³ to be able to support the ability of consumers to send text messages to 911 no later than December 31, 2014. We also require that covered text providers must begin delivering text-to-911 service by June 30, 2015, or within six months from the date it receives a valid PSAP request, whichever is later, unless the PSAP and covered text provider mutually agree to an alternate timeframe and the covered text provider timely notifies the Commission within 30 days of the agreement.

4. Our requirements build on the voluntary commitment by the four largest CMRS providers – 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, 2014.⁴ The requirements we adopt here are largely consistent with the Carrier-NENA-APCO Agreement.

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. § 604.

³ In this *Second Report and Order*, “covered text providers” includes all CMRS providers, as well as all providers of interconnected text messaging services that enable consumers to send text messages to and receive text messages from all or substantially all text-capable U.S. telephone numbers, including through the use of applications downloaded or otherwise installed on mobile phones. See 47 C.F.R. § 20.18(n)(1). For purposes of text-to-911, we divide text applications into two broad categories: (1) interconnected text applications that use SMS or 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, 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. We limit initial application of our text-to-911 requirements to interconnected texts, as the term “interconnected” has been defined for purposes of text-to-911, and this definition should not be construed as affecting the definition of “interconnected service” in the context of Section 332 of the Communications Act. See 47 U.S.C. § 332(d)(2).

⁴ 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....)

5. Establishing timeframes for the addition of text capability to the 911 system for all consumers will vastly enhance the system's accessibility for over 40 million Americans who are deaf, hard of hearing, or speech-disabled. 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 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.⁵ The four major CMRS providers have been using SMS-based text for their initial text-to-911 deployments, and we expect other initial deployments to be similarly SMS-based.

7. 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 CMRS provider. 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 Report and Order*, we ensure that consumers have access to the same text-to-911 capabilities on the full array of interconnected texting applications that they use ubiquitously within a reasonable timeframe.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

8. No commenter raised issues in response to the IRFA included in the *Second Further Notice*. The Commission concludes that the mandates adopted here provide covered text providers and Public Safety Answering Points (PSAPs) with a sufficient measure of flexibility to account for technical and cost-related concerns. In the event that small entities face unique circumstances that restrict their ability to comply with the Commission's rules, the Commission can address them through the waiver process. The Commission has determined that implementing text-to-911 is technically feasible and the cost of implementation is small.

C. Description and Estimate of the Number of Small Entities to Which the Adopted 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 rules adopted, herein.⁶ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small

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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*).

⁵ 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 accessed 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 accessed Nov. 19, 2012).

⁶ 5 U.S.C. § 603(b)(3).

organization,” and “small governmental jurisdiction.”⁷ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.⁸ 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 SBA.⁹ Below, we describe and estimate the number of small entity licensees that may be affected by the adopted rules.

10. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions.* Our action may, over time, affect small entities that are not easily categorized at present. The Commission’s current Master PSAP registry indicates that there are more than 6,000 active PSAPs, which we conclude fall into this category.¹⁰ Should a PSAP choose to implement text-to-911, they will be affected by the adopted rules. We emphasize, however, that PSAPs retain the choice of whether to implement text-to-911; any PSAP that chooses not to implement text-to-911 will not be affected by the adopted rules. As of 2009, small businesses represented 99.9% of the 27.5 million businesses in the United States, according to the SBA.¹¹ Additionally, a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”¹² Nationwide, as of 2007, there were approximately 1,621,315 small organizations.¹³ Finally, the term “small governmental jurisdiction” is defined generally as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹⁴ Census Bureau data for 2007 indicate that there were 89,527 governmental jurisdictions in the United States.¹⁵ We estimate that, of this total, as many as 88,761 entities may qualify as “small governmental jurisdictions.”¹⁶ Thus, we estimate that most governmental jurisdictions are small.

⁷ 5 U.S.C. § 601(6).

⁸ 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 term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

⁹ 15 U.S.C. § 632.

¹⁰ See Federal Communications Commission, Master PSAP Registry, *available at* <http://www.fcc.gov/encyclopedia/9-1-1-master-psap-registry> (last accessed July 22, 2014).

¹¹ See SBA, Office of Advocacy, “Frequently Asked Questions,” *available at* <http://web.sba.gov/faqs/faqindex.cfm?areaID=24> (last accessed Dec. 11, 2012).

¹² 5 U.S.C. § 601(4).

¹³ INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

¹⁴ 5 U.S.C. § 601(5).

¹⁵ U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007).

¹⁶ 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 local 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 52,095. If we make the same population assumption about special districts, specifically that they are likely to have a population of 50,000 or less, and also assume that special districts are different from county, municipal, township, and school districts, in 2007 there were 37,381 such special districts. Therefore, there are a total of 89,476 local government organizations. As a basis of estimating how many of these 89,476 local government organizations were small, in 2011, we note that there were a total of 715 cities and towns (incorporated places and minor civil divisions) with populations over 50,000. CITY AND TOWNS TOTALS: VINTAGE 2011 – U.S. Census Bureau, *available at* <http://www.census.gov/popest/data/cities/totals/2011/index.html>. If we subtract the 715 cities and towns that meet or exceed the 50,000 population threshold, we conclude that approximately 88,761 are small. U.S. CENSUS

(continued....)

a. Wireless Telecommunications Service Providers

11. 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.

12. *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.¹⁷ The appropriate size standard under SBA rules is for the category Wireless Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.¹⁸ 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 employment of 1,000 employees or more. 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 our actions.¹⁹

13. *Incumbent Local Exchange Carriers (Incumbent LECs)*. Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to incumbent local exchange services. The closest applicable size standard under SBA rules is for Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.²⁰ According to Commission data, 1,307 carriers reported that they were incumbent local exchange service providers.²¹ Of these 1,307 carriers, an estimated 1,006 have 1,500 or fewer employees and 301 have more than 1,500 employees.²² Consequently, the Commission estimates that most providers of incumbent local exchange service are small businesses that may be affected by rules adopted pursuant to the *Second Report and Order*.

14. We have included small incumbent LECs in this present RFA analysis. As noted above, a “small business” under the RFA is one that, *inter alia*, meets the pertinent small business size standard (e.g., a telephone communications business having 1,500 or fewer employees), and “is not dominant in its field of operation.”²³ The SBA’s Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not “national” in scope.²⁴ We have therefore included small incumbent LECs in this RFA analysis, although we emphasize

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

¹⁷ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2007%20NAICS%20Search>

¹⁸ 13 C.F.R. § 121.201, NAICS code 517110.

¹⁹ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-skip=600&-ds_name=EC0751SSSZ5&-lang=en

²⁰ See 13 C.F.R. § 121.201, NAICS code 517110.

²¹ See Federal Communications Commission, *Trends in Telephone Service* (Sep. 2010) at Table 5.3, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-301823A1.pdf (last accessed Apr. 25, 2013).

²² See *id.*

²³ 5 U.S.C. § 601(3).

that this RFA action has no effect on Commission analyses and determinations in other, non-RFA contexts.

15. *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.²⁵ 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.²⁶ Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees and 186 have more than 1,500 employees.²⁷ 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.²⁸ In addition, 72 carriers have reported that they are Other Local Service Providers.²⁹ Of the 72, seventy have 1,500 or fewer employees and two have more than 1,500 employees.³⁰ 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 adopted in the *Second Report and Order*.

16. *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.³¹ 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.³² These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.³³ 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.³⁴ On April 15, 1999, the Commission

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²⁴ See Letter from Jere W. Glover, Chief Counsel for Advocacy, SBA, to William E. Kennard, Chairman, FCC (May 27, 1999). The Small Business Act contains a definition of “small business concern,” which the RFA incorporates into its own definition of “small business.” See 15 U.S.C. § 632(a); see also 5 U.S.C. § 601(3). SBA regulations interpret “small business concern” to include the concept of dominance on a national basis. See 13 C.F.R. § 121.102(b).

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

²⁶ See *Trends in Telephone Service* at Table 5.3.

²⁷ See *id.*

²⁸ See *id.*

²⁹ See *id.*

³⁰ See *id.*

³¹ 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, ¶¶ 57–60 (1996) (“*PCS Report and Order*”); see also 47 C.F.R. § 24.720(b).

³² See *PCS Report and Order*, 11 FCC Rcd at 7852 ¶ 60.

³³ See *Alvarez Letter 1998*.

³⁴ See *Broadband PCS, D, E and F Block Auction Closes*, Public Notice, Doc. No. 89838 (rel. Jan. 14, 1997).

completed the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.³⁵ Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

17. 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.³⁶ 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.³⁷ On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.³⁸ Of the 12 winning bidders in that auction, five claimed small business status and won 18 licenses.³⁹ On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78.⁴⁰ Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.⁴¹

18. *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*.⁴² 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.⁴³

19. *Rural Radiotelephone Service.* The Commission has not adopted a size standard for small businesses specific to the Rural Radiotelephone Service. A significant subset of the Rural Radiotelephone Service is the Basic Exchange Telephone Radio System (“BETRS”). In the present

³⁵ 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).

³⁶ See *C and F Block Broadband PCS Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 2339 (2001).

³⁷ See *Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58*, Public Notice, 20 FCC Rcd 3703 (2005).

³⁸ See *Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71*, Public Notice, 22 FCC Rcd 9247 (2007).

³⁹ *Id.*

⁴⁰ See *Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78*, Public Notice, 23 FCC Rcd 12749 (WTB 2008).

⁴¹ *Id.*

⁴² *Amendment of the Commission’s Rules to Establish New Personal Communications Services, Narrowband PCS*, GN 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).

⁴³ See Letter to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, FCC, from Aida Alvarez, Administrator, SBA (Dec. 2, 1998).

context, we will use the SBA's small business size standard applicable to Wireless Telecommunications Carriers (except Satellite), *i.e.*, an entity employing no more than 1,500 persons.⁴⁴ There are approximately 1,000 licensees in the Rural Radiotelephone Service, and the Commission estimates that there are 1,000 or fewer small entity licensees in the Rural Radiotelephone Service that may be affected by the rules adopted herein.

20. *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.⁴⁵ The SBA has approved these definitions.⁴⁶ 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.

21. *220 MHz Radio Service – Phase I Licensees.* The 220 MHz service has both Phase I and Phase II licenses. Phase I licensing was conducted by lotteries in 1992 and 1993. There are approximately 1,515 such non-nationwide licensees and four nationwide licensees currently authorized to operate in the 220 MHz band. The Commission has not developed a small business size standard for small entities specifically applicable to such incumbent 220 MHz Phase I licensees. To estimate the number of such licensees that are small businesses, the Commission applies the small business size standard under the SBA rules applicable. The SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.⁴⁷ For this service, the SBA uses the category of Wireless Telecommunications Carriers (except Satellite). Census data for 2007, which supersede data contained in the 2002 Census, show that there were 1,383 firms that operated that year.⁴⁸ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small.

22. *220 MHz Radio Service – Phase II Licensees.* The 220 MHz service has both Phase I and Phase II licenses. The Phase II 220 MHz service is a new service, and is subject to spectrum auctions. In the *220 MHz Third Report and Order*, the Commission adopted a small business size standard for defining "small" and "very small" businesses for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.⁴⁹ This small business standard indicates that a "small business" is an entity that, together with its affiliates and controlling principals, has average

⁴⁴ NAICS Code 51210.

⁴⁵ 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).

⁴⁶ See Letter to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, Federal Communications Commission, from Aida Alvarez, Administrator, Small Business Administration, dated December 2, 1998.

⁴⁷ 13 C.F.R. § 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

⁴⁸ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

⁴⁹ Amendment of Part 90 of the Commission's Rules to Provide For the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service, *Third Report and Order*, 12 FCC Rcd 10943, 11068-70 ¶¶ 291-295 (1997).

gross revenues not exceeding \$15 million for the preceding three years.⁵⁰ A “very small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that do not exceed \$3 million for the preceding three years.⁵¹ The SBA has approved these small size standards.⁵² Auctions of Phase II licenses commenced on and closed in 1998.⁵³ In the first auction, 908 licenses were auctioned in three different-sized geographic areas: three nationwide licenses, 30 Regional Economic Area Group (EAG) Licenses, and 875 Economic Area (EA) Licenses. Of the 908 licenses auctioned, 693 were sold.⁵⁴ Thirty-nine small businesses won 373 licenses in the first 220 MHz auction. A second auction included 225 licenses: 216 EA licenses and 9 EAG licenses. Fourteen companies claiming small business status won 158 licenses.⁵⁵ A third auction included four licenses: 2 BEA licenses and 2 EAG licenses in the 220 MHz Service. No small or very small business won any of these licenses.⁵⁶ In 2007, the Commission conducted a fourth auction of the 220 MHz licenses.⁵⁷ Bidding credits were offered to small businesses. A bidder with attributed average annual gross revenues that exceeded \$3 million and did not exceed \$15 million for the preceding three years (“small business”) received a 25 percent discount on its winning bid. A bidder with attributed average annual gross revenues that did not exceed \$3 million for the preceding three years received a 35 percent discount on its winning bid (“very small business”). Auction 72, which offered 94 Phase II 220 MHz Service licenses, concluded in 2007.⁵⁸ In this auction, five winning bidders won a total of 76 licenses. Two winning bidders identified themselves as very small businesses won 56 of the 76 licenses. One of the winning bidders that identified themselves as a small business won 5 of the 76 licenses won.

23. *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).⁵⁹ Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.⁶⁰ According to *Trends in Telephone Service* data, 413 carriers reported that they were engaged in wireless telephony.⁶¹ Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.⁶² Therefore, more than half of these entities can be considered small.

⁵⁰ *Id.* at 11068 ¶ 291.

⁵¹ *Id.*

⁵² See Letter to Daniel Phythyon, Chief, Wireless Telecommunications Bureau, Federal Communications Commission, from Aida Alvarez, Administrator, Small Business Administration, dated January 6, 1998 (*Alvarez to Phythyon Letter 1998*).

⁵³ See generally “220 MHz Service Auction Closes,” *Public Notice*, 14 FCC Rcd 605 (WTB 1998).

⁵⁴ See “FCC Announces It is Prepared to Grant 654 Phase II 220 MHz Licenses After Final Payment is Made,” *Public Notice*, 14 FCC Rcd 1085 (WTB 1999).

⁵⁵ See “Phase II 220 MHz Service Spectrum Auction Closes,” *Public Notice*, 14 FCC Rcd 11218 (WTB 1999).

⁵⁶ See “Multi-Radio Service Auction Closes,” *Public Notice*, 17 FCC Rcd 1446 (WTB 2002).

⁵⁷ See “Auction of Phase II 220 MHz Service Spectrum Scheduled for June 20, 2007, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction 72,” *Public Notice*, 22 FCC Rcd 3404 (2007).

⁵⁸ See “Auction of Phase II 220 MHz Service Spectrum Licenses Closes, Winning Bidders Announced for Auction 72, Down Payments due July 18, 2007, FCC Forms 601 and 602 due July 18, 2007, Final Payments due August 1, 2007, Ten-Day Petition to Deny Period,” *Public Notice*, 22 FCC Rcd 11573 (2007).

⁵⁹ 13 C.F.R. § 121.201, NAICS code 517210.

⁶⁰ *Id.*

⁶¹ *Trends in Telephone Service* at Table 5.3.

⁶² *Id.*

24. *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.⁶³ The second has a size standard of \$25 million or less in annual receipts.⁶⁴

25. 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.”⁶⁵ Census Bureau data for 2007 show that 512 Satellite Telecommunications firms that operated for that entire year.⁶⁶ Of this total, 464 firms had annual receipts of under \$10 million, and 18 firms had receipts of \$10 million to \$24,999,999.⁶⁷ Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by our action. However, in this *Second Report and Order*, we exclude mobile satellite services (MSS) from our rules at this time.

26. 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.”⁶⁸ For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year.⁶⁹ Of this total, 2,346 firms had annual receipts of under \$25 million and 37 firms had annual receipts of \$25 million to \$49,999,999.⁷⁰ Consequently, the Commission estimates that the majority of All Other Telecommunications firms are small entities that might be affected by our action.

b. Equipment Manufacturers

27. *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.”⁷¹ The SBA has

⁶³ 13 C.F.R. § 121.201, NAICS code 517410.

⁶⁴ 13 C.F.R. § 121.201, NAICS code 517919.

⁶⁵ U.S. Census Bureau, 2007 NAICS Definitions, “517410 Satellite Telecommunications.”

⁶⁶ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

⁶⁷ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

⁶⁸ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search>.

⁶⁹ U.S. Census http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

⁷⁰ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

⁷¹ U.S. Census Bureau, 2007 NAICS Definitions, “334220 Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing”; <http://www.census.gov/naics/2007/def/ND334220.HTM#N334220>.

developed a small business size standard for firms in this category, which is: all such firms having 750 or fewer employees.⁷² According to Census Bureau data for 2010, there were a total of 810 establishments in this category that operated for the entire year.⁷³ Of this total, 787 had employment of fewer than 500, and an additional 23 had employment of 500 to 999.⁷⁴ Thus, under this size standard, the majority of firms can be considered small.

28. *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.”⁷⁵ 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.⁷⁶ 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

29. *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.⁷⁷ The SBA has developed a small business size standard for this category, which is annual gross receipts of \$25 million or less.⁷⁸ 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 more.⁷⁹ Based on this data, the Commission concludes that the majority of the businesses engaged in this industry are small.

30. *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

⁷² 13 C.F.R. § 121.201, NAICS code 334220.

⁷³ U.S. Census Bureau, American FactFinder, 2010 Economic Census, Industry Series, Industry Statistics by Employment Size, NAICS code 334220 (released June 26, 2012); <http://factfinder.census.gov>. The number of “establishments” is a less helpful indicator of small business prevalence in this context than would be the number of “firms” or “companies,” because the latter take into account the concept of common ownership or control. Any single physical location for an entity is an establishment, even though that location may be owned by a different establishment. Thus, the numbers given may reflect inflated numbers of businesses in this category, including the numbers of small businesses.

⁷⁴ *Id.* Eighteen establishments had employment of 1,000 or more.

⁷⁵ U.S. Census Bureau, 2007 Economic Census, Industry Series: Manufacturing, “Semiconductor and Related Device Manufacturing,” NAICS code 334413.

⁷⁶ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=300&-ds_name=EC073111&-_lang=en.

⁷⁷ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch>.

⁷⁸ 13 C.F.R. §121.201.

⁷⁹ http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_54SSSZ1&prodType=table.

on a single technology or a combination of technologies.”⁸⁰ The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees.⁸¹ According to Census Bureau data for 2007, there were 3,188 firms in this category, total, that operated for the entire year.⁸² Of this total, 3,144 firms had employment of 999 or fewer employees, and 44 firms had employment of 1000 employees or more.⁸³ 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.⁸⁴ Of this total, 394 firms had employment of 999 or fewer employees, and two firms had employment of 1000 employees or more.⁸⁵ Consequently, we estimate that the majority of these firms are small entities that may be affected by rules adopted pursuant to the *Second Report and Order*.

31. *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 portals).”⁸⁶ The SBA has developed a small business size standard for this category, which is: all such firms having 500 or fewer employees.⁸⁷ According to Census Bureau data for 2007, there were 2,705 firms in this category that operated for the entire year.⁸⁸ Of this total, 2,682 firms had employment of 499 or fewer employees, and 23 firms had employment of 500 employees or more.⁸⁹ Consequently, the Commission estimates that the majority of these firms are small entities that may be affected by rules adopted pursuant to the *Second Report and Order*.

32. *All Other Information Services.* The Census Bureau defines this industry as including “establishments primarily engaged in providing other information services (except news syndicates, libraries, archives, Internet publishing and broadcasting, and Web search portals).”⁹⁰ The Commission’s

⁸⁰ 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 accessed Mar. 27, 2013).

⁸¹ 13 C.F.R. § 121.201, NAICS code 517110.

⁸² 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).

⁸³ See *id.*

⁸⁴ 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).

⁸⁵ See *id.*

⁸⁶ U.S. Census Bureau, “2007 NAICS Definitions: 519130 Internet Publishing and Broadcasting and Web Search Portals,” available at <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=519130&search=2007%20NAICS%20Search> (last accessed Mar. 27, 2013).

⁸⁷ See 13 C.F.R. § 121.201, NAICS code 519130.

⁸⁸ 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 519130” (issued Nov. 2010).

⁸⁹ *Id.*

⁹⁰ U.S. Census Bureau, “2007 NAICS Definitions: 519190 All Other Information Services”, available at <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=519190&search=2007%20NAICS%20Search> (last accessed Mar. 27, 2013).

action pertains to interconnected 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 SBA has developed a small business size standard for this category; that size standard is \$7.0 million or less in average annual receipts.⁹¹ According to Census Bureau data for 2007, there were 367 firms in this category that operated for the entire year.⁹² Of these, 334 had annual receipts of under \$5.0 million, and an additional 11 firms had receipts of between \$5 million and \$9,999,999.⁹³ Consequently, the Commission estimates that the majority of these firms are small entities that may be affected by our actions herein.

33. *All Other Telecommunications.* The Census Bureau defines this industry as including “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 The SBA has developed a small business size standard for this category; that size standard is \$30.0 million or less in average annual receipts.⁹⁵ According to Census Bureau data for 2007, there were 2,383 firms in this category that operated for the entire year.⁹⁶ Of these, 2,305 establishments had annual receipts of under \$10 million and 84 establishments had annual receipts of \$10 million or more.⁹⁷ Consequently, the Commission estimates that the majority of these firms are small entities that may be affected by our action.

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

34. In the *Second Report and Order*, the Commission amends its Part 20 rules to require CMRS providers and interconnected text providers (collectively, “covered text providers”) to be capable of supporting text-to-911 by December 31, 2014. Specifically, the rules apply to all CMRS providers subject to the Commission’s Part 20 rules as well as all providers of interconnected text messaging services that enable consumers to send text messages to and receive text messages from all or substantially all text-capable U.S. telephone numbers, including through the use of applications downloaded or otherwise natively installed on a mobile device. Covered text providers must commence delivery of 911 text messages to requesting PSAPs by June 30, 2015, or six months from the date of receipt of a valid PSAP request, whichever is later. Covered text providers and PSAPs may mutually agree to an alternate implementation timeframe, but covered text providers must notify the Commission within 30 days of such agreement. A PSAP may make a valid request for text-to-911 service by certifying that it is “text-ready,” and we encourage PSAPs to register in the Commission’s PSAP registry

⁹¹ See 13 C.F.R. § 121.201, NAICS code 519190.

⁹² 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 519190” (issued Nov. 2010).

⁹³ U.S. Census Bureau, 2007 Economic Census, Information: Subject Series – Estab and Firm Size: Table 4, “Receipts Size of Firms for the United States: 2007, NAICS Code 519190” (issued Nov. 2010).

⁹⁴ U.S. Census Bureau, “2007 NAICS Definitions: 517919 All Other Telecommunications,” available at <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search> (last accessed Mar. 27, 2013).

⁹⁵ See 13 C.F.R. § 121.201, NAICS code 517919.

⁹⁶ U.S. Census Bureau, 2007 Economic Census, Information: Subject Series – Estab and Firm Size: Table 4, “Receipts Size of Firms for the United States: 2007, NAICS Code 517919” (issued Nov. 2010).

⁹⁷ See *id.*

once it is available. Covered text providers may utilize a messaging platform that can support multiple addresses or enable sending images and video, but they must ensure that these features do not interfere with the delivery of the text portion of the message to a PSAP.

35. The *Second Report and Order* also requires covered text providers to route text messages to the appropriate PSAP using coarse location information or some other equivalent means. In the event a covered text provider implements a text-to-911 solution that does not access the CMRS network – and therefore cannot provide coarse location – the covered text provider must obtain sufficient location information through some other means to route the text to the appropriate PSAP. All covered text providers using device-based location information that requires consumer activation must clearly inform consumers that they must grant permission for the text messaging application to access the wireless device’s location information in order to enable text-to-911. If a consumer does not permit this access, then the application must provide an automated bounce-back message.

36. We anticipate that many interconnected text providers will choose the CMRS network-based delivery model for text-to-911, at least as an interim measure. In order to facilitate the use of this method, the *Second Report and Order* requires that CMRS providers shall allow access to capabilities necessary for transmission of text-to-911 communications by other covered text providers. However, CMRS providers need not reconfigure any SMS text-to-911 platforms in order to facilitate other covered text providers’ use of their networks, and the obligation to allow access to CMRS networks is limited to the extent that the CMRS providers offers SMS. A covered text provider selecting the CMRS network-based solution must ensure that its service is technically compatible with the CMRS provider’s SMS networks and devices, and in conformance with any applicable technical standards.

37. The *Second Report and Order* also states that CMRS providers may receive commercially reasonable compensation for the delivery of 911 text messages,⁹⁸ but it does not require CMRS providers to allow text-to-911 traffic over their SMS networks from any end users that do not have an underlying SMS plan. All covered text providers using the CMRS network-based delivery model for text-to-911 must clearly inform consumers that, absent an SMS plan with the consumer’s underlying CMRS provider, the covered text provider may be unable to deliver 911 text messages. The *Second Report and Order* also permits CMRS providers to migrate away from SMS platforms in favor of newer technologies. CMRS providers are not required to maintain the SMS network for use by other covered text providers, but if they choose to migrate to another technology, they must provide reasonable advance notice to the affected covered text providers about not less than 90 days prior to the migration.

38. The compliance requirements in the *Second Report and Order* will apply to all entities in the same manner. The Commission believes that applying the same rules equally to all entities in this context is necessary to alleviate potential consumer confusion from adopting different rules for different covered text providers. The Commission finds, and the record in this proceeding confirms, that the costs and/or administrative burdens associated with the rules will not unduly burden small entities.

39. Based on the record, CMRS providers and interconnected text providers have agreed that these changes are technically and financially feasible, with relatively small costs to the covered text provider. Compliance costs for interconnected text providers will be small, requiring only minor coding and/or server changes. Additionally, covered text providers can operate using the ATIS/TIA J-STD-110, which serves to reduce potential administrative, legal and technical costs of compliance.

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

40. The RFA requires an agency to describe any significant, specifically small business

⁹⁸ We do not specify or require any terms or conditions governing the relationships between covered text providers and CMRS providers, beyond specifying that, to the extent they enter into business agreements regarding access to SMS networks, the terms of such agreements should be commercially reasonable.

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) an exemption from coverage of the rule, or any part thereof, for small entities.”⁹⁹

41. Based on the Commission’s review of the record, the Commission finds that it is practicable for all CMRS providers, including small and rural CMRS providers, to implement text-to-911 by December 31, 2014 without incurring unduly burdensome costs. The record also reflects that it is not unduly burdensome for interconnected text providers to implement text-to-911 in the same timeframe.¹⁰⁰ The *Second Report and Order* recognizes the technical and operational issues that must be addressed before commencing text-to-911 service, and allows six months from the date of a valid PSAP request for covered text providers to achieve text-to-911 capability.

42. In considering the record received in response to the *Second Further Notice*, the Commission has examined alternatives to ease the burden on small and rural CMRS providers. These alternatives included extending the implementation deadline, or exempting small and rural CMRS providers. However, the record in this proceeding indicates that the technical and financial costs for implementing text-to-911 are not unduly burdensome. The rules adopted in the *Second Report and Order* also allow for alternate timeframes if both the PSAP and the covered text provider mutually agree to the adjusted timeline and the covered text provider notifies the Commission within 30 days of the agreement, which should alleviate the burdens of smaller covered text providers. The Commission has also examined ways in which the burden may be eased for interconnected text providers, including extending the implementation deadline. The *Second Report and Order* also describes a PSAP database, to be administered by the Commission, in which covered text providers can identify which PSAPs are “text ready,” thereby reducing the amount of time and resources that would be dedicated to reaching out to PSAPs and handling PSAP requests.

43. Further, the *Second Report and Order* contains a detailed Cost-Benefit Analysis which finds that the life-saving public safety benefits of imposing a text-to-911 requirement on covered text providers far outweigh the costs of such a rule.

44. Finally, in the event that small entities face unique circumstances with respect to these rules, such entities may request waiver relief from the Commission. Accordingly, the Commission finds that it has discharged its duty to consider the burdens imposed on small entities.

F. Legal Basis

45. The legal basis for any action that may be taken pursuant to this *Second Report and Order* is contained in Sections 1, 2, 4(i), 4(j), 4(o), 251(e), 303(b), 303(g), 303(r), 316, and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 154(j), 154(o), 251(e), 303(b), 303(g), 303(r), 316, 403, and Section 4 of the Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, Sections 101 and 201 of the New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, and Section 106 of the Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 47 U.S.C. §§ 615a, 615a-1, 615b, 615c.

⁹⁹ 5 U.S.C. §§ 603(c)(1)-(c)(4).

¹⁰⁰ See, e.g., Letter from Rebecca Murphy Thompson, General Counsel, to Marlene H. Dortch, Secretary, Federal Communications Commission, in PS Docket No. 11-153 and PS Docket No. 10-255, March 25, 2013 (CCA *Ex Parte*).

APPENDIX D

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 *Third Further Notice of Proposed Rulemaking (Third Further Notice)* 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 *Third Further Notice*. The Commission will send a copy of the *Third Further Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).² In addition, the *Third Further Notice* and IRFA (or summaries thereof) will be published in the Federal Register.³

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

2. In the *Third Further Notice*, we seek comment on ways to improve text-to-911 service for Americans by providing enhanced location and roaming support, and how to best include future texting services within the scope of existing and proposed text-to-911 requirements. We seek comment regarding the technical feasibility of specific approaches, and likely timeframe for covered text providers to achieve these capabilities. We seek comment on solutions for roaming support and whether we should consider near-term requirements for roaming, or whether we should focus on roaming in conjunction with the deployment of next generation wireless networks, such as LTE. Finally, we seek comment on how newer services and networks will affect the delivery of text-to-911. These improvements will further long-term objectives to improve 911 communications and enable PSAPs to dispatch first responders directly and quickly to the scene of an emergency.

3. Currently, SMS text-to-911 does not provide for enhanced location of a mobile device due to differences in platforms for voice and text to send enhanced location information. We propose that, no later than two years from the effective date of the adoption of final rules, covered text providers must deliver enhanced location information (consisting of the best available location that covered text providers could obtain from any location technologies, or combination of technologies, including device-based location) with texts to 911. We also seek comment on the technical, privacy, and security issues associated with using commercial location-based services (cLBS) for enhanced text-to-911 location information. Lastly, we seek comment on the feasibility of sending text messages to 911 through Wi-Fi networks and on the capability of covered text providers to deliver location information with texts routed based on Wi-Fi location. There are times when a user's cell phone has only Wi-Fi as a means of connectivity, and being able to utilize it to connect with PSAPs when no other medium is available could save lives.

4. We must also consider the availability of roaming. If a subscriber is outside of his or her coverage area, the subscriber may not be able to reach 911 via text message unless roaming technology is provided where the mobile device can "roam" on another network and connect to other service providers that can support the delivery of 911 text messages. Thus we propose to require covered text providers to support roaming for text-to-911 no later than two years from the effective date of the adoption of final roaming rules and seek comment on this approach.

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).

5. We also seek specific comment on NENA's proposal with regard to roaming solutions. NENA's proposal would first have the Commission encourage industry standards work and establish a medium-term roaming requirement, tied to the development of necessary standards, for integrated text origination platforms. Second, the Commission would require roaming support for text-to-911 service as a precondition to the launch of any IP-based replacement for current-generation integrated text platforms. NENA also proposes that covered text providers could opt out of the medium-term deadline if they voluntarily commit to transition from their current generation platforms to NG911-compatible protocols and location mechanisms. Specifically, NENA proposes that the Commission "establish a three-year deadline (December 31st, 2017) for roaming support on existing platforms, extendable to five years (December 31st, 2019) for carriers who commit to supporting NG-compatible text service on a network-wide basis by that date." Providing roaming support for text-to-911 is important to ensure that the benefits of text-to-911 are shared by all consumers, and to encourage wireless competition by allowing smaller and rural CMRS providers the ability to offer their subscribers comparable services as larger CMRS providers.

6. Finally, we seek comment on our ultimate goal that text and other messaging to 911 be available on all text-capable media, regardless of the transmission method. The limitations of SMS-based text-to-911 underscore the need for further development of evolving platform architectures and standards that can deliver enhanced location and support roaming with text-to-911. We believe that a forward-looking view of text messaging services, encompassing all text-capable media, is warranted to ensure continued access to emergency services as some covered text providers migrate from legacy 911 networks to an all-IP environment. We also seek comment on how newer services and networks, as well as the transition to such newer services and networks, will affect the delivery of text-to-911, including text messages originating from Wi-Fi only locations, non-interconnected text applications, rich media text services, real-time text, and telematics and other public safety services. Thus, in the *Third Further Notice*, we seek to ensure that consumers have access to non-voice/text capabilities to our 911 system with enhanced location, roaming support, and future texting services, affirming our commitment to ensuring access to emergency services for all Americans, as well as advance the Commission's goal of enabling text, photo, and video transmission to 911.

B. Legal Basis

7. The legal basis for any action that may be taken pursuant to this *Third Further Notice of Proposed Rulemaking* is contained in Sections 1, 2, 4(i), 4(j), 4(o), 251(e), 303(b), 303(g), 303(r), 316, and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 154(j), 154(o), 251(e), 303(b), 303(g), 303(r), 316, 403, and Section 4 of the Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, Sections 101 and 201 of the New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, and Section 106 of the Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. No. 111-260, 47 U.S.C. §§ 615a, 615a-1, 615b, 615c.

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

8. 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.⁴ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."⁵ In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.⁶ A small business concern is one which: (1)

⁴ 5 U.S.C. §§ 603(b)(3), 604(a)(3).

⁵ 5 U.S.C. § 601(6).

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).⁷

9. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions.* Our action may, over time, affect small entities that are not easily categorized at present. The Commission's current Master PSAP registry indicates that there are more than 6,000 active PSAPs, which we conclude fall into this category. Should a PSAP choose to implement text-to-911, they will be affected by the proposed rules. We emphasize, however, that PSAPs retain the choice of whether to implement text-to-911; any PSAP that chooses not to implement text-to-911 will not be affected by the adopted rules. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.⁸ First, nationwide, there are a total of approximately 27.9 million small businesses, according to the SBA.⁹ 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."¹⁰ Nationwide, as of 2007, there were approximately 1,621,315 small organizations.¹¹ 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."¹² Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.¹³ We estimate that, of this total, as many as 88,506 entities may qualify as "small governmental jurisdictions."¹⁴ Thus, we estimate that most governmental jurisdictions are small.

1. Telecommunications Service Entities

a. Wireless Telecommunications Service Providers

10. 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

(Continued from previous page) _____

⁶ 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."

⁷ 15 U.S.C. § 632.

⁸ See 5 U.S.C. §§ 601(3)–(6).

⁹ Figure is from 2010. See SBA, Office of Advocacy, available at http://www.sba.gov/sites/default/files/FAQ_Sept_2012.pdf (last accessed Jan. 31, 2014).

¹⁰ 5 U.S.C. § 601(4).

¹¹ INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

¹² 5 U.S.C. § 601(5).

¹³ U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007).

¹⁴ 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. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Tables 427, 426 (Data cited therein are from 2007).

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.”

11. 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.

12. *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.¹⁵ 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.¹⁶ For this category, census data for 2007 show that there were 11,163 establishments that operated for the entire year.¹⁷ Of this total, 10,791 establishments had employment of 999 or fewer employees and 372 had employment of 1000 employees or more.¹⁸ 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 *Third Further Notice*.¹⁹

13. *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 2007 show that there were 441 firms in this category that operated for the entire year. Of this total, 441 firms had employment of 999 or fewer employees.²⁰ Thus, under this category and associated small business size standard, all such firms can be considered small. For the census category of Cellular and Other Wireless Telecommunications, Census Bureau data for 2007 show that there were 10,722 firms in this category that operated for the entire year. Of this total, 10,293 firms had employment of 99 or fewer employees. Thus, under this second category and size standard, the majority of firms can, again, be considered small.

14. *Incumbent Local Exchange Carriers (Incumbent LECs)*. Neither the Commission nor the

¹⁵ 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 accessed July 22, 2014).

¹⁶ See *id.* See also 13 C.F.R. § 121.201, NAICS code 517210.

¹⁷ 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 accessed July 22, 2014).

¹⁸ *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.”

¹⁹ *Id.*

²⁰ U.S. Census Bureau, Subject Series: Information, Table 5, “Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 5172101” (issued Nov. 2010), available at http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ2&prodType=table (last accessed July 22, 2014).

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.²¹ 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.²² Of these 1,307 carriers, an estimated 1,006 have 1,500 or fewer employees and 301 have more than 1,500 employees.²³ 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 *Third 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.²⁴

15. 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.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 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.²⁶ 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.²⁷ Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees and 186 have more than 1,500 employees.²⁸ 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.²⁹ In addition, 72 carriers have reported that they are Other Local Service Providers.³⁰ Of the 72, seventy have 1,500 or fewer employees and two have more than 1,500 employees.³¹ 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 *Third Further Notice*.

16. *Broadband Personal Communications Service*. The broadband personal communications

²¹ 13 C.F.R. § 121.201, NAICS code 517110.

²² 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*).

²³ See *id.*

²⁴ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-skip=600&-ds_name=EC0751SSSZ5&-lang=en.

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

²⁶ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-skip=600&-ds_name=EC0751SSSZ5&-lang=en.

²⁷ See *Trends in Telephone Service* at Table 5.3.

²⁸ See *id.*

²⁹ See *id.*

³⁰ See *id.*

³¹ See *id.*

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.³² 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.³³ These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.³⁴ 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.³⁵ On April 15, 1999, the Commission completed the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.³⁶ Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

17. 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.³⁷ 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.³⁸ On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.³⁹ Of the 12 winning bidders in that auction, five claimed small business status and won 18 licenses.⁴⁰ On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block

³² 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).

³³ See *PCS Report and Order*, 11 FCC Rcd at 7852 ¶ 60.

³⁴ 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*).

³⁵ See “Broadband PCS, D, E and F Block Auction Closes,” *Public Notice*, Doc. No. 89838 (rel. Jan. 14, 1997).

³⁶ 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).

³⁷ See “C and F Block Broadband PCS Auction Closes; Winning Bidders Announced,” *Public Notice*, 16 FCC Rcd 2339 (WTB 2001).

³⁸ See “Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58,” *Public Notice*, 20 FCC Rcd 3703 (WTB 2005).

³⁹ See “Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71,” *Public Notice*, 22 FCC Rcd 9247 (WTB 2007).

⁴⁰ *Id.*

Broadband PCS licenses in Auction No. 78.⁴¹ Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.⁴²

18. *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*.⁴³ 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.⁴⁴

19. *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.⁴⁵ 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.⁴⁶ The SBA has approved these small business size standards for both the 800 MHz and 900 MHz SMR Service.⁴⁷ 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.⁴⁸ 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.⁴⁹ 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.⁵⁰

20. 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

⁴¹ See “Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78,” *Public Notice*, 23 FCC Rcd 12749 (WTB 2008).

⁴² *Id.*

⁴³ 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).

⁴⁴ See *Alvarez Letter 1998*.

⁴⁵ 47 C.F.R. §§ 90.810, 90.814(b), 90.912.

⁴⁶ *Id.*

⁴⁷ See *Alvarez Letter 1999*.

⁴⁸ See 900 MHz Specialized Mobile Radio Service Spectrum Auction Closes: Winning Bidders Announced,” *Public Notice*, 19 FCC Rcd 3921 (WTB 2004).

⁴⁹ 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).

⁵⁰ See “Multi-Radio Service Auction Closes,” *Public Notice*, 17 FCC Rcd 1446 (WTB 2002).

MHz SMR band qualified as small or very small businesses.⁵¹ 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.⁵² 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.

21. 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.⁵³ 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.

22. *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.⁵⁴ In 2006, the Commission conducted its first auction of AWS-1 licenses.⁵⁵ In that initial AWS-1 auction, 31 winning bidders identified themselves as very small businesses.⁵⁶ Twenty-six of the winning bidders identified themselves as small businesses.⁵⁷ In a subsequent 2008 auction, the Commission offered 35 AWS-1 licenses.⁵⁸ Four winning bidders identified themselves as very small businesses, and three of the winning bidders identified themselves as a small business.⁵⁹ 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 bands but has proposed to treat both AWS-2 and AWS-3 similarly to broadband PCS service and AWS-1

⁵¹ 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).

⁵² See “800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced,” *Public Notice*, 16 FCC Rcd 1736 (2000).

⁵³ See generally 13 C.F.R. § 121.201, NAICS code 517210.

⁵⁴ 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).

⁵⁵ 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*).

⁵⁶ 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*).

⁵⁷ See *id.*

⁵⁸ See *AWS-1 and Broadband PCS Procedures Public Notice*, 23 FCC Rcd at 7499. Auction 78 also included an auction of broadband PCS licenses.

⁵⁹ 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).

service due to the comparable capital requirements and other factors, such as issues involved in relocating incumbents and developing markets, technologies, and services.⁶⁰

23. *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.⁶¹ The SBA has approved these definitions.⁶² 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.⁶³ 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.⁶⁴ 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.⁶⁵ SBA approval of these definitions is not required.⁶⁶ In 2000, the Commission conducted an auction of 52 Major Economic Area (“MEA”) licenses.⁶⁷ 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 2001. All eight of the licenses auctioned were sold to three bidders. One of these bidders was a small

⁶⁰ 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).

⁶¹ 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).

⁶² *See Alvarez Letter 1998.*

⁶³ 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).

⁶⁴ *Id.* at 5343 ¶ 108.

⁶⁵ *Id.*

⁶⁶ *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).

⁶⁷ *See* 700 MHz Guard Bands Auction Closes: Winning Bidders Announced, *Public Notice*, 15 FCC Rcd 18026 (WTB 2000).

business that won a total of two licenses.⁶⁸

24. *Upper 700 MHz Band Licenses.* In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses.⁶⁹ 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.⁷⁰ 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.

25. *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.⁷¹ 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.⁷² 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.⁷³ 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.⁷⁴ The SBA approved these small size standards.⁷⁵ 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.⁷⁶ A second auction commenced on May 28, 2003, closed on June 13, 2003, and included 256 licenses.⁷⁷ Seventeen winning bidders claimed small or very small business status, and nine winning bidders claimed entrepreneur status.⁷⁸ In 2005, the Commission completed an auction of 5 licenses in the Lower 700 MHz band. All three winning bidders claimed small business status.

26. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.⁷⁹ An auction of A, B and E block 700 MHz licenses was held in 2008.⁸⁰ Twenty winning bidders claimed small business status (those with attributable average annual gross

⁶⁸ See 700 MHz Guard Bands Auction Closes: Winning Bidders Announced, *Public Notice*, 16 FCC Rcd 4590 (WTB 2001).

⁶⁹ *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

⁷⁰ See Auction of 700 MHz Band Licenses Closes, *Public Notice*, 23 FCC Rcd 4572 (WTB 2008).

⁷¹ 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*).

⁷² See *id.*, 17 FCC Rcd at 1087–88 ¶ 172.

⁷³ See *id.*

⁷⁴ See *id.*, 17 FCC Rcd at 1088 ¶ 173.

⁷⁵ See *Alvarez Letter 1998*.

⁷⁶ See Lower 700 MHz Band Auction Closes, *Public Notice*, 17 FCC Rcd 17272 (2002).

⁷⁷ See Lower 700 MHz Band Auction Closes, *Public Notice*, 18 FCC Rcd 11873 (2003).

⁷⁸ See *id.*

⁷⁹ *700 MHz Second Report and Order*, *Second Report and Order*, 22 FCC Rcd 15289, 15359 n.434 (2007).

⁸⁰ See Auction of 700 MHz Band Licenses Closes, *Public Notice*, 23 FCC Rcd 4572 (2008).

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).

27. *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).⁸¹ Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.⁸² According to *Trends in Telephone Service* data, 413 carriers reported that they were engaged in wireless telephony.⁸³ Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.⁸⁴ Therefore, more than half of these entities can be considered small.

28. *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.⁸⁵ The second has a size standard of \$25 million or less in annual receipts.⁸⁶

29. 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.”⁸⁷ Census Bureau data for 2007 show that 607 Satellite Telecommunications firms that operated for that entire year.⁸⁸ Of this total, 533 firms had annual receipts of under \$10 million, and 74 firms had receipts of \$10 million to \$24,999,999.⁸⁹ Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by rules proposed in the *Third Further Notice*.

30. 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.”⁹⁰ For this category, Census Bureau data for 2007 show that there were a total of 2,623

⁸¹ 13 C.F.R. § 121.201, NAICS code 517210.

⁸² *Id.*

⁸³ TRENDS IN TELEPHONE SERVICE, tbl. 5.3.

⁸⁴ *Id.*

⁸⁵ 13 C.F.R. § 121.201, NAICS code 517410.

⁸⁶ 13 C.F.R. § 121.201, NAICS code 517919.

⁸⁷ U.S. Census Bureau, 2007 NAICS Definitions, “517410 Satellite Telecommunications.”

⁸⁸ *See*

http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table (last accessed Jan. 31, 2014).

⁸⁹ *See*

http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table (last accessed Jan. 31, 2014).

⁹⁰ *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.⁹¹ Consequently, the Commission estimates that the majority of All Other Telecommunications firms are small entities that might be affected by rules proposed in the *Third Further Notice*.

b. Equipment Manufacturers

31. *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.⁹² Thus, under this size standard, the majority of firms can be considered small.

32. *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.”⁹³ 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.⁹⁴ 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

33. *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.⁹⁵ The SBA has developed a small business size standard for this category, which is annual gross receipts of \$25 million or less.⁹⁶ 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

⁹¹ See

http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ1&prodType=table (last accessed Jan. 31, 2014).

⁹² 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 accessed Jan. 31, 2014).

⁹³ U.S. Census Bureau, 2007 Economic Census, Industry Series: Manufacturing, “Semiconductor and Related Device Manufacturing,” NAICS code 334413.

⁹⁴ See

http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_31I1&prodType=table (last accessed Jan. 31, 2014).

⁹⁵ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch> (last accessed Jan 31, 2014).

⁹⁶ 13 C.F.R. §121.201.

more.⁹⁷ Based on this data, the Commission concludes that the majority of the businesses engaged in this industry are small.

34. *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.”⁹⁸ The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees.⁹⁹ According to Census Bureau data for 2007, there were 3,188 firms in this category, total, that operated for the entire year.¹⁰⁰ Of this total, 3,144 firms had employment of 999 or fewer employees, and 44 firms had employment of 1000 employees or more.¹⁰¹ 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.¹⁰² Of this total, 394 firms had employment of 999 or fewer employees, and two firms had employment of 1000 employees or more.¹⁰³ Consequently, we estimate that the majority of these firms are small entities that may be affected by rules proposed in the *Third Further Notice*.

35. *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

36. The *Third Further Notice* proposes that no later than two years of the effective date of the adoption of final rules, covered text providers must deliver enhanced location information (consisting of the best available location that covered text providers could obtain from any available location technology or combination of technologies, including device-based location) with texts to 911. The *Third Further Notice* also proposes to require covered text providers to support roaming for text-to-911 no later than two years from the effective date of the adoption of final rules. The *Third Further Notice* also seeks comment on alternative proposals for enhanced location and roaming support.

⁹⁷ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=511210&search=2007%20NAICS%20Search> (last accessed Jan. 31, 2014).

⁹⁸ 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 accessed Jan. 31, 2014).

⁹⁹ 13 C.F.R. § 121.201, NAICS code 517110.

¹⁰⁰ 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).

¹⁰¹ *See id.*

¹⁰² 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).

¹⁰³ *See id.*

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

37. 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.”¹⁰⁴

38. The *Third Further Notice* analyzes a variety of ways in which covered text providers could use enhanced location to route 911 text messages, as well as provide the PSAP with the caller’s actual location, and seeks comment on associated costs. It also seeks comment on possible roaming solutions and the evolution of texting applications and how consumers use them. The *Third Further Notice* seeks comment on costs associated with the proposed requirements for enhanced location and roaming support, as well as the costs associated with alternative proposals. It also seeks comment on how future texting services would be best and most cost-efficiently incorporated into the 911 ecosystem.

39. The *Third Further Notice* also seeks comment on ways existing infrastructure and resources could be used to comply with the proposed rules, as well as how enhanced location and roaming capabilities could be addressed via expenditures made for broader NG911 deployments.

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

40. None.

¹⁰⁴ 5 U.S.C. §§ 603(c)(1)-(c)(4).

APPENDIX E**List of Commenters**

Association of Public Safety Communications Officials (APCO)
AT&T Services, Inc. (AT&T)
Alliance for Telecommunication Industry Solutions (ATIS)
Bandwidth.com, Inc. (Bandwidth)
Boulder Regional Emergency Telephone Service Authority (BRETSA)
CenturyLink
Comcast Corporation (Comcast)
Competitive Carriers Association (CCA)
CTIA – The Wireless Association (CTIA)
GoGo, Inc.
Inmarsat
Iridium Constellation, LLC
Information Technology Industry Council (ITIC)
Media Friends, Inc. (Heywire)
Microsoft Corporation (Microsoft)
Motorola Mobility, LLC (Motorola Mobility)
National Association of State 911 Administrators (NASNA)
National Emergency Number Association (NENA)
NTCA – The Rural Broadband Association (NTCA)
Rehabilitation Engineering Research Center on Telecommunications Access (RERC-TA)
Rural Wireless Association, Inc. (RWA)
Sprint Corporation (Sprint)
TeleCommunication Systems, Inc. (TCS)
Texas 9-1-1 Alliance and Texas Commission on State Emergency Communications (Texas 911 Entities)
textPlus, Inc.
Telecommunications Industry Association (TIA)
T-Mobile USA, Inc. (T-Mobile)
TruePosition
Twilio, Inc.
Verizon and Verizon Wireless (Verizon)
Vermont Enhanced 911 Board
Voice on the Net Coalition (VON Coalition)
VTel Wireless, Inc.
Wireless Rehabilitation Engineering Research Center (Wireless RERC)

**STATEMENT OF
CHAIRMAN TOM WHEELER**

Today, we are taking actions that allow 911 to keep pace with new technology, that sets the stage for enabling even more functionality on the 911 platform, and, most importantly, that will save lives.

Texting has become a widely adopted communications tool and is the principal means by which many people with disabilities communicate. Last year, in fact, Americans sent 1.91 trillion traditional text messages. And beyond that huge number, multiple interconnected text providers have begun competing with the text service provided by CMRS carriers.

This past January, the Commission unanimously adopted a *Policy Statement and Further Notice of Proposed Rulemaking* which reflected a very straightforward philosophy: as technologies and consumer behavior continue to change, the FCC needs to make sure 911 changes with them. We proposed that not only should all carriers enable text-to-911, but all interconnected text providers should as well. In other words, if a consumer can use an app to text to a phone number, she should be able to text to the most important phone she may ever use – 911.

What we've learned in the ensuing months has reinforced why that philosophy is so important. For example, we know that text-to-911, where it is available, is a lifesaver. In Hamilton County, Ohio, a young woman was contemplating suicide, and a friend urged her to call for help. She didn't want her parents to hear her on the phone, though, so she texted instead, and received counseling that may have saved her life. In Collier County, Florida, which only recently started supporting text-to-911, a woman was having a medical emergency and called 911 three times, but was unable to speak. She then texted, "Help me," and first responders were finally dispatched. And in Vermont, which supports texting statewide, a woman was injured while hiking alone on a remote trail. Although cell phone coverage was not good enough for her to make a voice call, she was able to text 911 and through that exchange direct first responders to her location.

In light of these facts, the actions we take today make perfect sense. In the Order, we adopt rules that ensure 911 keeps pace with changing technology by requiring that all interconnected text providers have the capability of delivering a text to 911. In the Further Notice, we seek comment on proposals to address how non-interconnected text services should be dealt with. Text messaging has become increasingly utilized by mobile users, and it should be able to serve those consumers in a time of need.

When we adopted the *Policy Statement* in January, I spoke of the regulatory "see-saw," which holds that if industry acts in the public interest, FCC involvement will be low, but if the public interest is not being served, the Commission will not hesitate to act. On text-to-911, it's time for the Commission to act.

The four nationwide wireless carriers voluntarily committed to support text-to-911 by May 15, 2014, and as promised, they now support text-to-911 throughout their networks. But no other providers have offered voluntary commitments to implement text-to-911. This is disappointing. No company can hang up on 911, so today's *Report and Order* will require all wireless providers and interconnected text providers to support text-to-911. For those carriers that voluntarily implemented the service, our rules should not change their course or impose any undue burdens. Importantly, these rules apply to certain over-the-top, interconnected text providers as well as the traditional CMRS carriers.

While the FCC and certain parts of the industry are stepping up to meet their responsibilities, we need more state and local governments to step up and ensure that the 911 fees that consumers pay as part of their monthly phone bills are being directed to ensuring that public safety answering points, or PSAPs, have the resources they need to stay current. Today, text-to-911 is supported by more than 100 PSAPs serving 18 states (including the entire states of Vermont and Maine). Those numbers have improved since January, but significantly more work needs to be done.

The message to providers, the public safety community, and, most importantly, consumers, should be crystal clear: the Commission will not stand idly by and allow public safety to become an

afterthought just because technologies change. Americans should not have to worry about whether the platforms and services they use for everyday communications can reach 911 in an emergency.

**STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN
APPROVING IN PART; DISSENTING IN PART**

Helen Keller once said, “Alone we can do so little; together we can do so much.” When you step away from all of the technical details this item is simply about relevant stakeholders putting that principle into action. The ability to send messages, photos, and video clips, as well as other innovations in broadband technologies, can improve 9-1-1 communications for all Americans. Text messaging plays a vital role in protecting life and property when making a voice call is either dangerous or impossible due to transmission problems. This technology enables the more than 40 million people in the U.S. with hearing and speech disabilities to use their mobile phones to effectively access emergency services. Without text-to-911, they may possess the ability to place a call; but remain unable to express what type of help they need.

This is why the Commission has been trying, for several years now, to promote the deployment of text-to-911 and other Next Generation technologies. The reality is that the wireless industry and public safety agencies have found it difficult to deploy these advanced communications services. The first substantial breakthrough occurred, however, in December of 2012 thanks to industry collaboration. The four nationwide wireless carriers agreed to deploy text-to-911, on a nationwide basis, by May 15, 2014. That agreement helped accelerate progress to more than 90 percent of the nation’s wireless consumers. The wider availability of these services is also spurring Public Safety Answering Points, or PSAPs, to upgrade their networks so they can accept text to 911 messages. It is great to see entities, like Intrado and TeleCommunication Systems, work closely to help PSAPs deploy more text-to-911 services.

We build on the momentum from that 2012 voluntary commitment with this item. The *Order* makes clear that text-to-911 benefits should extend to consumers of all CMRS providers as well as those of certain interconnected Over-the-Top text messaging services. We are able to take this significant action thanks to the fact that several companies are currently sending text messages, using SMS-based protocols, routed over the underlying carriers’ SMS network. In the *Further Notice* released in January of this year, we expressly sought comment on the technical details of the various approaches Over the Top service messages can use to send text messages. Several companies offering this service supported the technology neutral approach that the Commission adopts today. They also asserted that it is technically feasible to set December 31, 2014 as the deadline, for Over the Top message services to comply with the text-to-911 mandate.

I am also pleased to see that the Commission establishes a centralized database through which PSAPs may register as “text-ready” and notify all relevant covered text providers of their ability to accept texts. This approach can help facilitate wider deployment of text to 911 networks.

The *Further Notice* asks important questions about promoting the delivery of these messages through more advanced technologies. It seeks comment on a proposal to require enhanced location accuracy information when a 911 text message is delivered. It also asks technical questions about delivering these messages over Wi-Fi only networks and telematics services.

When I left the building at 6:30 PM last evening, I was prepared to enthusiastically support this item. This morning, I arrived to the office to learn of an eleventh hour proposal that would direct the Communications Security, Reliability, and Interoperability Council, or CSRIC, to form a task force that would inquire into a number of issues. I agree that it is appropriate to form a Task Force and to examine the structure and architecture of our nation’s PSAPs and determine whether there are ways that PSAPs could promote efficiency of operations, safety of life, and cost containment. I must dissent, however, from the proposal that came to my attention less than two hours ago, that the Task Force inquire into whether states, Tribal, and local entities that divert E911 funds should be ineligible to participate on various FCC councils, committees, and working groups. Doing so unnecessarily prejudices the issue and

creates avoidable friction with our state partners that I worked for years, as the former Joint Board Chair, to improve.

I commend those parties, who have been working constructively with the Commission staff, and relevant stakeholders over the years. Your collaboration is vital to a successful transition to Next Generation 911 technologies. I also wish to thank Admiral Simpson, David Furth, Nicole McGinnis, Tim May and the other members of the Public Safety and Homeland Security Bureau, for working so diligently, on this item. Happy anniversary, Mr. Siehl. What a fine way to celebrate your milestone of serving 30 years at the Commission.

**STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL**

Earlier this week I had the chance to help the Association of Public Safety Communications Officials mark their 80th annual conference. Speaking directly to first responders about 911 brings into sharp focus the importance of our nationwide emergency number. So does traveling around the country and talking directly to public safety officials on the front lines. I am proud to say I have been in 911 calling centers from Arkansas to Alaska, from New York to Nevada, from Colorado to California—and many, many more places in between.

Every visit is striking. Because emergency operators amaze. When crises mount and calls come tumbling in, they answer their phones with steely calm—and help ensure that help is on the way.

Every visit also reminds me that the ways we communicate are changing. It was not that long ago that emergency calls to 911 came only from landline phones. But over time, we expanded 911 service to mobile phones. We also made 911 an essential feature of interconnected VoIP service.

So times change, technology marches on, and we find new ways to bring the ways we communicate into the 911 fold.

That is what we do here today with texting. Texting, after all, has become second nature to millions of Americans, especially young people. Many of us use our phones more for texting than for speaking. We use texting to reach out to friends and family, confirm plans, vote in contests online and on the air, and donate to charities and campaigns.

That is why I support the effort today to codify policies to make sure that providers of text messages have systems capable of supporting text-to-911 service. This means that texting services that have become so essential for so many of us can be there when we reach out in crisis.

I know how critical these services can be because I know texting-to-911 can save lives. It already has in Vermont—where I had the privilege of seeing the service in action in Burlington. In addition, I know that texting-to-911 can be a game changer for those who are deaf or have speech difficulties. In fact, I had the privilege of seeing this up close in Frederick, Maryland, where the service is available and the Maryland School for the Deaf is located.

I also know that texting-to-911 can bring new complications. Because, let's be frank, voice calling still offers a speed and response that is superior to texting. As countless public safety officials have told me, it offers the ability for conversation that a drop down menu of responses to an emergency text does not. Educating the public matters. So I hope that all stakeholders work together on outreach. Because in times of crisis, we need to understand the best way to call for help.

While we look to the future with texting, there are other 911 issues that require attention. Today, more than 70 percent of 911 calls are made from wireless phones. That is more than 400,000 calls across the country every day. And this number is only going to grow. Because for roughly two in five households right now, their wireless phone is their only phone. Here in the District of Columbia that number is even larger—at one in two households.

Despite this nationwide change in calling practices, our rules that provide first responders with information about where we are when we call 911 are stranded in calling practices of the last century. They help first responders find you when you call from a landline phone. They assist first responders with locating you when you call from a wireless phone outdoors. But if you call from a wireless phone indoors, I'd recommend you hope and pray, because no location accuracy standards apply.

This gap needs attention. Because when you call for emergency help you want first responders to find you. To close this gap, I think we should start with the four essential principles that public safety officials, equipment manufacturers, and wireless carriers have come together to support—efforts must be dispatchable, verifiable, flexible, and deployable in reasonable time. I believe this is a strong foundation for improving wireless 911 location accuracy and finally fixing this this problem.

But back to texting. ICYMI, we update our rules today, we modernize our policies, and lay the foundation for making texting-to-911 more widely available. This has my support.

**DISSENTING STATEMENT OF
COMMISSIONER AJIT PAI**

The FCC has no higher purpose than promoting the safety of life and property through the use of communications. It's a goal Congress established for us in the very first section of the Communications Act.¹ And it's one I've taken seriously during my time on the Commission. It inspired my inquiry earlier this year to ensure that whenever someone calls 911, he or she reaches emergency personnel.² And thanks to the tireless efforts of Hank Hunt, Mark Fletcher, and many in our nation's lodging industry, we're starting to see real progress in connecting those in need with those who can help.

One of the things I've learned from this inquiry is that there can be tragic consequences when 911 technologies do not match up with consumer expectations. Unfortunately, that's the case with this *Order*. It encourages the public to dive into text-to-911 functionality when in reality there's hardly any water in the pool. Because I believe the *Order* is sure to result in massive consumer confusion, and therefore will endanger rather than advance public safety, I respectfully dissent.

The feel-good headlines following this decision will no doubt lead consumers to believe that they can now text 911. Just look at what has already happened. Jimmy Kimmel recently informed millions of viewers that, thanks to the FCC, text to 911 "should be accessible everywhere by the end of the year."³ And Jimmy Fallon recently told *Tonight Show* audiences that "the FCC rolled out a new service that lets people text 911 for help."⁴

There are countless reasons why all of this media coverage—and the coverage to follow today's action—is and will be horribly misleading at best. Let me start with a fact that is mentioned nowhere in this *Order*: Less than two percent of our nation's 911 call centers (known as Public Safety Answering Points or PSAPs) accept text messages. So in your moment of need, if you try texting 911 in over 98 percent of the country, you won't reach emergency personnel *no matter what application you use*.

Nothing in today's *Order* will change that fact anytime soon. The *Order* claims that PSAPs are not accepting texts because the FCC has not required carriers to deploy it, but this assertion does not stand up to scrutiny. Currently, the four largest wireless carriers make text-to-911 service available to over 90 percent of our nation's wireless consumers. So the bottleneck clearly isn't the private sector.

Even in the few areas where PSAPs are accepting texts, there's no guarantee. If your phone is roaming, text-to-911 won't work. If your device happens to be in Wi-Fi-only mode, our rules won't apply. If you have a data plan that allows you to text, but no SMS subscription, your text to 911 won't go through. If you haven't agreed to let a texting app access your phone's location information, your text will fail. And today's mandate doesn't even cover some of the most popular texting apps like WhatsApp. So if you try to text 911 using those apps, you won't reach first responders anywhere in the country, regardless of your phone's settings.

Put simply, we're adopting a patchwork approach that exposes consumers to numerous pitfalls. When a domestic violence victim is desperate, when the deaf or hard-of-hearing need help, we can't expect them to navigate the intricacies of these rules—to somehow intuit the precise operating mode of

¹ See 47 U.S.C. § 151.

² See Statement of FCC Commissioner Ajit Pai on the Importance of Connecting Americans to Emergency Personnel Whenever They Dial 911 (Jan. 13, 2014), <http://go.usa.gov/9DxJ>; Remarks of Commissioner Ajit Pai at the 9-1-1 Goes to Washington Conference (Mar. 24, 2014), <http://go.usa.gov/9DjA>; Statement of FCC Commissioner Ajit Pai Regarding the Ongoing Inquiry into Consumers' Ability to Reach Emergency Personnel Whenever They Dial 911 (June 24, 2014), <http://go.usa.gov/NNj4>.

³ "Is Texting 911 A Good Idea?," available at <https://www.youtube.com/watch?v=nPD6AmpFQ5g>.

⁴ "Quotables from 'The Tonight Show Starring Jimmy Fallon' May 12-May 16," available at <https://www.nbcumv.com/quotables-tonight-show-starring-jimmy-fallon-may-12-may-16>.

their phone or know whether their app is “interconnected” as defined by the FCC. Indeed, the Commission itself has recognized that confusion about text-to-911 will harm consumers. That’s why we adopted bounce-back rules just last year: to mitigate consumer confusion.⁵

To be sure, we need to ensure that our 911 rules keep pace with changes in technology and consumer usage. But we must do so guided by a fundamental principle that dates back to the days of Hippocrates—first, do no harm. This *Order* doesn’t meet this standard. How many Americans will waste precious seconds during an emergency attempting in vain to text 911 because of it—seconds that could make all the difference? I fear that the answer will be too many.

Another casualty of this *Order*, and an ironic one, is that it will delay, if not disrupt, the pro-consumer transition of public safety technology from SMS to NG911. NG911 is not based on SMS, but rather on the Internet Protocol, or IP. By allowing IP-based text messaging, NG911 will genuinely benefit consumers. NG911 systems are built with redundancy in mind, and the use of IP allows widespread interoperability. NG911 will have built-in capabilities that will allow all consumers, including those with speech or hearing disabilities, to have reliable, real-time text communication with emergency responders.

In short, NG911 is truly a life-saving advancement. That’s why Congress,⁶ public safety organizations,⁷ and industry⁸ have all urged the Commission to focus its efforts on accelerating the deployment of NG911—the public safety component of the overall IP Transition.

By contrast, SMS has inherent limitations that, for 911 purposes, render it inappropriate for use as anything other than an interim, stop-gap measure. SMS messages can be delayed, lost, or delivered out of sequence. I’ve experienced that when I send SMS messages, and I’m sure many of you have as well.

These limitations might not matter for everyday communication. But they can have serious consequences in an emergency. Indeed, the FCC’s own Communications Security, Reliability, and Interoperability Council (CSRIC) highlighted SMS’s limitations in detail at the beginning of our rulemaking process. It stated back then that “there remains disagreement about whether this method of access should even be considered for 9-1-1 because of its unreliability and other factors.”⁹ Commenters have told us the same is true now.¹⁰

⁵ See *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications; Framework for Next Generation 911 Deployment*, PS Docket Nos. 11-153, 10-255, Report and Order, 28 FCC Rcd 7556, 7626 (2013) (Concurring Statement of Commissioner Ajit Pai).

⁶ See Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §§ 6501–09, 126 Stat. 156, 237–45 (2012) (containing the Next Generation 9-1-1 Advancement Act of 2012).

⁷ See, e.g., NENA Reply at 5.

⁸ See, e.g., Microsoft Comments at 2; see also Bandwidth.com Comments at 4.

⁹ CSRIC 4B, Transition to Next Generation 9-1-1, Final Report at 9, 53–54, 107 (Mar. 14, 2011), <http://go.usa.gov/NmfB>; see also *Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications, Framework for Next Generation 911 Deployment*, PS Docket Nos. 11-153, 10-255, Notice of Proposed Rulemaking, 26 FCC Rcd 13615, 13622, para. 20 (2011) (*2011 Notice*) (discussing the CSRIC report).

¹⁰ See, e.g., MediaFriends, Inc. (d/b/a Heywire) Comments at 8 (“Text messages, in its current native form is a ‘lossy’ communications mechanism, meaning that there is no 100% guaranteed delivery of messages. In addition, a person may or may not receive an error message that their Text-to-911 did not successfully get delivered as the technology employed by the ecosystem . . . could span multiple entities that may or may not be aware of handoffs of messages between one another.”).

Small wonder, then, that when we launched this proceeding in 2011, we did so with the clear purpose of accelerating the deployment of NG911.¹¹ For we knew even then that SMS-based text-to-911 was an unsatisfactory legacy technology that would not be part of the NG911 world.

But where have we ended up? We've lost sight of the forest for the trees. The *Order* says little about the NG911 transition and does even less to advance it. Instead, it attempts to construct a detailed text-to-911 regime based entirely on the legacy SMS network. And the proposed rulemaking portion of the *Order* compounds this error by seeking comment on how we can graft additional and even more detailed requirements onto the SMS network.

More importantly, the record shows that diving down this rabbit hole will only impede the NG911 transition. As one commenter put it, “this approach takes industry off the path to NG911.”¹² Another stated that “[r]equiring carriers to divert resources in this manner will only serve to delay the deployment of next generation emergency services, including robust text-to-911 service.”¹³ The National Emergency Number Association (NENA) echoed these concerns, observing that “solutions premised on legacy network elements and concepts . . . will not form part of the long-term NG9-1-1 ecosystem.”¹⁴ In short, this *Order* will serve to frustrate, not further, the deployment of NG911—a 21st century public safety technology that actually *will* enable reliable text and multimedia messaging.

Consumer confusion and delay of NG911 aren't the only flaws in the *Order*. The cost-benefit analysis is another. It overstates the benefits by assuming that text-to-911 is available nationwide, even though we know the reality is quite the opposite. On the other side of the ledger, the analysis does not account for the tragic costs that will result from consumer confusion. Nor does it contain any discussion of the costs interconnected app providers will incur as a result of the *Order*'s approach, which requires them to use—and pay for access to—other company's software and networks.¹⁵

Additionally, this *Order* leaves far too many technical questions—some of them quite fundamental—unanswered. Who is responsible for transmitting bounce-back messages to consumers now that over-the-top (OTT) apps will be invoking the device's native SMS software—the OTT provider or the wireless carrier? Will any reply messages from a PSAP be delivered to the OTT app or will it go instead to the device's native text messaging app? Will consumers sending a 911 text from their OTT app really need to press send twice—once when they use their OTT app and then a second time when that app invokes the native SMS—as the item suggests? Will the FCC allow a migration from SMS to IP-based messaging if the only feasible method for delivering OTT texts relies on the SMS network? This decision offers no guidance at all on these and many other technical issues.

Moreover, the *Order*'s legal foundation is flawed. To highlight just one issue, it nowhere explains the statutory basis for the mandate that third-party apps be given access to a phone's SMS-API. The SMS-API is the set of instructions that tells the phone how software components should interact with

¹¹ See *2011 Notice*, 26 FCC Rcd 13642–55, paras. 68–103.

¹² Bandwidth.com Comments at 4.

¹³ T-Mobile Comments at 3.

¹⁴ NENA Reply at 5.

¹⁵ See *Order* at App. A, Rule 20.18(n)(11) (adopting an “*Access to SMS networks*” rule which requires CMRS providers that offer SMS to “allow access by any other covered text provider to the capabilities necessary for transmission of 911 text messages originating on such other covered text providers’ application services”). On this point, the item claims that “CMRS providers need not play an active role in the routing of” interconnected app providers’ texts. *Order* at para. 50. But this statement can’t be squared with the *Order* itself, which requires CMRS providers to carry those texts over their own SMS networks, process them at their own Text Control Centers, and then deliver them to PSAPs.

each other. It's installed by phone manufacturers, not wireless carriers. How do we have the authority to mandate that an app developer obtain access to a manufacturer's software?¹⁶

Finally, the *Order* penalizes the four nationwide wireless operators who volunteered to develop a text-to-911 solution without a mandate. This decision rewards those voluntary efforts—efforts that we should be encouraging—with strict regulatory mandates and the cold comfort that those new rules are “generally consistent” with their existing, voluntary deployments. In this, as in other areas, the message to the companies under our purview is clear: It doesn't matter how well you behave or what commitments you voluntarily undertake. There will be no escape from the FCC's regulatory playground.

* * *

When it comes to public safety, we all share the goal of making 911 more effective, responsive, and accessible to every American. And I do not for a minute question the sincerity of those supporting this *Order*. But adopting new rules that will confuse consumers during emergencies, that will delay the NG911 transition, and that will leave many key questions unanswered, undermines that goal. For all these reasons, I respectfully dissent.

I would like to conclude with a point that I hope will unite supporters and opponents of this item. It's a message I've heard from public safety officials all across the country—from Fairfax County, Virginia, to Sioux Falls, South Dakota, to Anchorage, Alaska. And it's one the American people need to hear: *If you need to reach emergency personnel, call 911 if you can.* Calling 911 is the most reliable means to reach someone who can help. Calling 911 is the best way to supply first responders with accurate information about your location. Calling 911 is the method most likely to give first responders the situational awareness that can help to save your life.

¹⁶ Cf. *American Library Ass'n v. FCC*, 406 F.3d 689 (D.C. Cir. 2005).

**STATEMENT OF
COMMISSIONER MICHAEL O'RIELLY
CONCURRING IN PART, DISSENTING IN PART**

Last week, I visited New York City's bustling Public Service Answering Point (PSAP) located at MetroTech Center in Brooklyn. This PSAP serves all of New York's five boroughs—which cover more than 300 square miles, approximately 8 to 11 million people depending upon the time of day, not to mention the subway system, rivers and harbors—and handles over 11 million calls a year.¹ I should start by thanking the men and women of the New York Police Department, Fire Department and Emergency Medical Services who spent many hours showing me the facilities and answering my many questions. Specifically, let me single out Chris Carver, the Deputy Director for Dispatch at the FDNY, for letting me test out a number of basic premises about 911, showing me the PSAP system's capabilities, and giving me a glimpse into what the future holds. Moreover, I commend the City of New York for bringing such disparate units under one roof to improve coordination, enhance public safety, and reduce costs.

My fundamental takeaway from the visit was that advanced technology provides great opportunity and promise for emergency communications, but it is planning and execution that determines ultimate success. Here is just one lesson learned from building New York City's unified PSAP: if you expect public safety officials to perform at their best during catastrophes, the facility better account for the needs of these dedicated public servants to stay on the job hour after hour. In the rush to open the building, the architects forgot to account for the basics—they didn't build enough bathrooms and there are no sleeping facilities.

The Commission seems to be making a similarly hasty decision here. When it comes to 911 in particular, we repeatedly discount or ignore simple truths about what we can force technology to do in a set timeframe. Successful technology development involves in-depth analysis and planning, software design cycles, and rigorous testing. It requires a methodical process that includes time, money, and a whole lot of effort to get to the desired outcome. Some, however, appear completely comfortable in placing blind faith in artificial deadlines. The theory seems to be: if we mandate it, the technology will come. Technology development, however, cannot be premised on a 1980s Kevin Costner movie about baseball.

Another overarching concern of mine is the Commission's pursuit of a regulatory scheme that presents private sector participants with the choice of either voluntarily implementing someone's preferred policy or facing onerous regulation. With all due respect, this model—which some have called the regulatory seesaw—is problematic. Conceptually, it is inherently unfair to have the heft of the Federal government on one side of the seesaw. Where is the voluntary part of this equation? Even more worrisome, in those instances where voluntary agreements were reached, the goalposts were moved to justify imposing rules on the participating industry. Here, the large wireless carriers rose to the challenge and “voluntarily” enabled text-to-911, but that did not free them from regulation. It may be hard finding companies to play this game in the future.

In this item, the Commission also extends the text-to-911 requirement to smaller Commercial Mobile Radio Services (CMRS) carriers. I find the arbitrary compliance deadlines troubling, especially for SMS technology which was never intended to be a secure communications platform. At least, in this case, there appears to be a defined technological path to offer SMS text-to-911, as demonstrated by the larger providers pursuant to their voluntary agreement. Although this is not my preferred approach, I will concur with the portion of the order pertaining to CMRS providers. I suspect that many smaller carriers may request waivers and hope such relief is appropriately and quickly granted when justified. I appreciate that the majority is willing to look closer at PSAP consolidation issues, which would eventually reduce compliance costs by reducing the millions spent to reach particular connection points.

¹ NYC Analytics, 911 Performance Reporting, <http://www.nyc.gov/html/911reporting/html/home/home.shtml> (Aug. 8, 2014).

What I am unable to support are the mandates imposed on interconnected text providers—the Over The Top (OTT) providers. I embrace what technology offers and oppose the efforts to pigeonhole these apps into the CMRS/PSAP paradigm, especially based on dubious legal authority. It has been clear since the notice of proposed rulemaking was issued that technological solutions for interconnected text apps were uncertain. Yes, we were able to draw schematics of how it might work on napkins, but three of the four supposed options do not exist.

When looking into the one available approach, a model tied to requiring access to the CMRS network, I had a series of questions about how the technology and regulations would work. Would CMRS providers have burdens or not? What happens if CMRS providers and interconnected text providers don't agree on terms to access the CMRS network? If an OTT text cannot access the CMRS providers SMS-API path, would the interconnected text provider be immediately noncompliant? Unfortunately, I couldn't get consistent answers in which I could place any confidence as to their accuracy. The prudent approach would have been to hold back on this portion and address it when this technology was tested and when the other models were available. Alas, we seem committed to moving forward on a predetermined timeline. The phrase “perfection is the enemy of good enough” has been used recently and it makes me cringe to think our work should be measured as just good enough. Don't we owe the American people more than good enough?

Good enough seems particularly perilous when talking about emergency communications. We do not want Americans relying on a system that does not work. And, we are partly to blame for increasing consumer expectation that text-to-911 is available via all communications platforms. Let me be clear: it is not and will not be for the foreseeable future. The Commission generates headlines by adopting items, such as the one today, but consumers—especially the millennials that are heavy users of OTT texting apps—are not provided the full story. Even if everything goes perfectly, the vast majority of consumers will not have text-to-911 anytime soon. The simple reason is that individual PSAPs have to be ready and capable of receiving such information. Today, less than 1.8 percent of PSAPs (121 of the approximately 6800) can receive text messages. If people just happen to live in the other 98.2 percent of America, they are out of luck. Additionally, text-to-911 is not available if you use non-interconnected text apps. We have not required it, and I don't think we should do so on closed systems. Accordingly, consumers should not have expectations that they can text-to-911 using a closed system that does not permit texts to phone numbers. Perhaps, we should share reality with consumers rather than false promises.

I also must dissent on the *Further Notice*. It prematurely proposes to adopt enhanced location and roaming support requirements and seeks comment on expanding text-to-911 to other texting services. Take, for instance, the portion on delivering enhanced location information by text providers in a short timeframe. The item sets out quotes from the Rural Wireless Association and Heywire in which they all raise problems with any particular timeframe, especially since the technology doesn't exist.² Further, NENA states in its comments that a “Commission mandate for enhanced text location capabilities would, at this juncture, be premature.”³ But, the further notice concludes and endorses adoption within a two-year timeframe and then seeks comment on such a mandate. I am equally disturbed by the notion that the Commission could require that consumers' privacy settings be completely overridden to enhance location

² Rural Wireless Association, PS Docket No. 11-153, Comments on the Second Further Notice, at 3 (Apr. 4, 2014); MediaFiends, Inc. (d/b/a Heywire), PS Docket No. 11-153, Comments on the Second Further Notice Comments, at 7 (Apr. 4, 2014).

³ National Emergency Number Association, PS Docket No. 11-153, Reply Comments on the Second Further Notice, at 6 (May 5, 2014) (stating that “the focus of the Commission, the industry, and the public safety community should be on the deployment of true NG9-1-1 capabilities, and because the Carrier-NENA-APCO agreement was clearly premised on the use of ‘coarse’ ... location” and industry is working on improving enhanced location.).

detection. This raises tremendous privacy considerations, including the U.S. government having access—via U.S. text providers—to an American citizen’s every move in granular detail.

Lastly, the so-called cost benefit analysis contained in this item is seriously flawed. Specifically, the item establishes a benefit floor of not less than \$63.7 million. But this figure was calculated by using the number of cardiac emergency 911 calls. However, there is no hard evidence that more lives of those suffering cardiac emergencies would be saved by texting 911. The item is full of such conjecture and assumptions, instead of credible facts and data. Further, we do not consider many of the costs or repercussions of our actions. For instance, will innovation in OTT texting be stifled, will interconnected text providers convert their offerings to non-interconnected platforms, will the costs end free OTT text apps, and is the cost worth it when Next Generation 911 communications systems are coming soon? I repeat my call for outside parties to help us by commenting on these calculations in this proceeding and others.

Although I disagree with the majority of today’s item, I thank the Commission staff for their efforts and the Chairman for the dialogue on this topic.