



6712-01

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 20

[PS Docket No. 11-153; PS Docket No. 10-255; FCC 12-149]

Next Generation 911; Text-to-911; Next Generation 911 Applications

**AGENCY:** Federal Communications Commission.

**ACTION:** Proposed rule.

**SUMMARY:** The Federal Communications Commission proposes to amend its rules by requiring all wireless carriers and providers of “interconnected” text messaging applications to support the ability of consumers to send text messages to 911 in all areas throughout the nation where 911 Public Safety Answering Points (PSAPs) are also prepared to receive the texts. In addition, to inform consumers and prevent confusion, the Commission proposes to require all wireless carriers and interconnected text messaging providers to send automated “bounce back” error messages to consumers attempting to text 911 when the service is not available.

**DATES:** Comment Date for Section III.A: **[INSERT DATE 20 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

Reply Comment Date for Section III.A: **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

Comment Date for Other Sections: **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

Reply Comment Date for Other Sections: **[INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].**

**ADDRESSES:** Submit comments to Federal Communications Commission, 445 12th Street, SW, Washington, DC 20554.

**FOR FURTHER INFORMATION CONTACT:** Aaron Garza, Attorney Advisor, (202) 418-1175. For additional information concerning the Paperwork Reduction Act information collection requirements contained in this document, contact Judith Boley-Herman, (202) 418-0214, or send an email to [PRA@fcc.gov](mailto:PRA@fcc.gov).

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's Further Notice of Proposed Rulemaking in PS Docket No. 11-153, PS Docket No. 10-255, FCC 12-149, released on December 13, 2012. The full text of this document is available for public inspection during regular business hours in the FCC Reference Center, Room CY-A257, 445 12th Street, SW., Washington, DC 20554, or online at <http://www.fcc.gov/document/text-911-further-notice-proposed-rulemaking>.

## **I. INTRODUCTION**

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

2. In this Further Notice of Proposed Rulemaking, we propose rules that will enable Americans to send text messages to 911 (text-to-911) and that will educate and inform consumers regarding the future availability and appropriate use of text-to-911. Specifically, we

propose to require all wireless carriers and providers of “interconnected” text messaging applications to support the ability of consumers to send text messages to 911 in all areas throughout the nation where 911 Public Safety Answering Points (PSAPs) are also prepared to receive the texts. In addition, to inform consumers and prevent confusion, we propose to require all wireless carriers and interconnected text messaging providers to send automated “bounce back” error messages to consumers attempting to text 911 when the service is not available.

3. Our proposals build on the recently filed voluntary commitment by the four largest wireless carriers – in an agreement with the National Emergency Number Association (NENA), and the Association of Public Safety Communications Officials (APCO) (Carrier-NENA-APCO Agreement) – to make text-to-911 available to their customers by May 15, 2014, and to provide automatic bounce back messages across their networks by June 30, 2013. The baseline requirements we propose in this Further Notice are modeled on the Carrier-NENA-APCO Agreement, and we seek comment on whether all carriers, including regional, small and rural carriers, and all “interconnected text” providers can achieve these milestones in the same or similar timeframes. To allow for the possibility of implementing our bounce back proposal by June 30, 2013, we are seeking comment on this portion of the Further Notice on an accelerated basis. Moreover, in light of the importance of these issues, we intend to resolve promptly the questions we raise in the remaining portion of the Further Notice in 2013.

4. Our proposal to add text capability to the 911 system will vastly enhance the system’s accessibility for over 40 million Americans with hearing or speech disabilities. It will also provide a vital and lifesaving alternative to the public in situations where 911 voice service is unavailable or placing a voice call could endanger the caller. Indeed, as recent history has shown, text messaging is often the most reliable means of communications during disasters where voice

calls cannot be completed due to capacity constraints. Finally, implementing text-to-911 represents a crucial next step in the ongoing transition of the legacy 911 system to a Next Generation 911 (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.

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

6. At the same time, we do not propose to limit our focus to SMS-based text. As a result of the rapid proliferation of smartphones and other advanced mobile devices, some consumers are beginning to move away from SMS to other IP-based text applications, including downloadable software applications provided by parties other than the underlying carrier. 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 Further Notice, we seek to ensure that consumers ultimately have access to the same text-to-911 capabilities on the full array of texting applications that they use for ubiquitous communication – regardless of provider or platform. We also propose that service providers who offer SMS-based

text-to-911 should have the flexibility to migrate their customers to other text-to-911 applications.

7. While our proposal is designed to accelerate the nationwide availability of text-to-911, we recognize that deployment will not be uniform, e.g., during the transition period, text-to-911 may be available in certain geographic areas while it is not available in others, or may be supported by certain carriers but not by others. This creates the risk of consumer confusion about the availability of text-to-911 as the transition proceeds – indeed, there is evidence that many consumers erroneously believe that they can already reach 911 by text, and that some have attempted to do so. Rapid implementation of the bounce back notification mechanism that we propose in this Further Notice is therefore critical to informing consumers and lessening potential confusion about text-to-911 availability. In addition, we intend to begin work immediately with PSAPs, carriers, service providers, disability organizations, consumer groups, and others to educate and inform consumers regarding the transition, local availability, and appropriate use of text-to-911.

8. Finally, we emphasize that even as adding text capability makes the 911 system more accessible and effective in enhancing public safety, text-to-911 is and will remain a complement to, rather than a substitute for, voice 911 service. The voice 911 system that has been maintained and improved over decades remains the preferred means of seeking help in an emergency in most instances. Moreover, voice 911 service will continue to be central and essential to the 911 system even as we add text, photo, data, and video capabilities in the course of migrating to NG911. Therefore, even as we take this first major step in the transition to NG911, we continue to encourage all consumers seeking emergency help to access 911 by voice whenever possible.

## **II. GENERAL BACKGROUND**

9. In September 2011, the Commission released a Notice of Proposed Rulemaking (Notice) (76 FR 63257, October 12, 2011), which sought comment on a number of issues related to the deployment of NG911, including potential near-term methods for delivering text-to-911; whether and how to prioritize 911 in major emergencies; how to facilitate the long-term deployment of text-to-911; the Commission's role in deploying text-to-911 and other NG911 applications; consumer education and disclosure mechanisms; and the relationship between this proceeding and the implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010 (CVAA).

A. Text-to-911 Deployments and Trials

10. While some commenters initially expressed concerns about implementing near-term text-to-911, both wireless carriers and public safety entities have more recently taken significant steps towards the near-term deployment of text-to-911, including SMS-based solutions. In May 2012, Verizon Wireless announced plans to deploy text-to-911 capability throughout its nationwide network in 2013. On December 10, 2012, Verizon Wireless commenced its rollout of text-to-911 service in York County, Virginia. In June 2012, AT&T also announced the goal of launching text-to-911 nationwide in 2013. In addition, the Alliance for Telecommunications Industry Solutions (ATIS), an organization consisting of a large number of wireless and wireline carriers as well as equipment vendors, has formed a committee to "create an ATIS standard(s) for SMS-to-9-1-1 that incorporates requirements, architecture, message flows, and product details." ATIS has targeted completion of these standards in the first quarter of 2013. Most recently, as noted above and described in further detail below, the four major wireless carriers, Sprint Nextel, AT&T, T-Mobile, and Verizon, have entered into a voluntary agreement with

NENA and APCO whereby the major carriers will provide text-to-911 service by May 15, 2014, to PSAPs who request the service.

11. Some of these same wireless carriers have already initiated text-to-911 trials in partnership with several PSAPs to assess the technical feasibility of text-to-911 and its impact on PSAP operations. Four trials are currently under way—three of which have yielded positive results. First, as just announced, AT&T is “in the process of launching a standards-based trial service for text-to-911 in the state of Tennessee ....” Additionally, in June 2009, Black Hawk County, Iowa partnered with Intrado (a provider of 911 technology solutions) and i wireless (a T-Mobile affiliate that offers regional wireless communications service), to provide text-to-911 service within the county. According to Black Hawk County, there have been no delayed or dropped text messages in the trial, nor has there been a “significant increase in incident volume.” Indeed, callers have benefitted from the technology in several situations. This includes women who have been at risk of domestic abuse who have been able to text for help undetected by their assailant; children reporting instances of domestic abuse; and anonymous reports of imminent sales of controlled substances. Black Hawk County has expanded the trial and now receives text messages from individuals throughout the state, which it then relays to the appropriate PSAP. According to Black Hawk County, the trial demonstrates that text-to-911 service “is reliable and...saves lives.”

12. In August 2011, the City of Durham, North Carolina (Durham) initiated an SMS-to-911 trial in partnership with Verizon Wireless and Intrado. According to Durham, the technology has worked reliably. Durham’s trial suggests that callers will continue to rely on voice calls to 911 and that concerns about text messages overwhelming PSAPs may be unfounded. Durham views the technology as a “valuable asset” and the North Carolina Director of the Division of

Services for the Deaf and the Hard of Hearing stated that “the significance of the program cannot be overstated.” More recently, the trial was extended “to accommodate Durham’s additional outreach to individuals with disabilities.”

13. In April 2012, the State of Vermont (Vermont) initiated a text-to-911 trial allowing any Verizon Wireless subscriber to send emergency text messages to the Williston, Vermont PSAP, provided that the text message is transmitted via a cell tower located within the physical boundaries of Vermont. The Executive Director of the Vermont E911 Board stated that implementing the trial “wasn’t...difficult at all” and that so far, the trial has proceeded “very smoothly.” Vermont believes that fears over the volume of emergency text messages are “overblown” and “remain[s] convinced that those who can make a voice call will make a voice call as that is the most efficient way to communicate in an emergency.”

14. Vermont further reports that as of August 2012, it had received only two legitimate emergency text messages, but in both cases emergency services were able to intervene successfully. In one case, a life was saved when emergency personnel were able to thwart an attempted suicide. In the other case, a domestic abuse victim was able to contact police, who then arrived on the scene and made an arrest. While Vermont recognizes that some parties would prefer to wait for a more advanced text-to-911 solution, Vermont maintains that the “individual whose life we saved and the domestic assault victim would likely disagree that it is too soon to have this technology available.” Vermont also indicates it has experienced some text “spoofing,” but notes that “there is nothing about this new technology that is any more likely to result in ‘spoof’ contacts than what we already deal with on the voice side of the system.” Additionally, Vermont did not experience any problems with text slang.

15. On October 30, 2012, Vermont submitted an ex parte filing indicating that it is maintaining the text-to-911 system past the end of its trial and is “currently working on enabling a second Public Safety Answering Point (PSAP) for redundancy purposes.” Vermont states that it “can report no negative operational impacts on our system as the result of the Verizon trial,” but that it needs the Commission’s assistance in “encouraging all of the carriers to do the right thing and enable text-to-9-1-1 now.” Vermont concludes by stating that “[w]e understand that there are some concerns both in the PSAP and industry communities about the timing of SMS text-to-9-1-1, but so long as the most common method of texting on today's devices remains SMS, we feel it is important to move ahead and not wait for the promises that other texting solutions might provide.” On December 3, 2012, Vermont announced that it would further expand its text-to-911 trial to include Sprint Nextel customers, in collaboration with the Vermont Enhanced 911 Board, Sprint Wireless, and Intrado.

#### B. Carriers’ Voluntary Commitments

16. On December 6, 2012, APCO, NENA, Sprint Nextel, AT&T, T-Mobile, and Verizon, entered into a voluntary agreement whereby each of the four major carriers will provide text-to-911 service by May 15, 2014, to PSAPs who request such a service. Under the terms of the Carrier-NENA-APCO Agreement, once a signatory carrier begins to offer text-to-911 service, “valid PSAP requests for Text-to-911 service will be implemented within a reasonable amount of time of receiving such a request, not to exceed six months.” A request will be considered “valid” if the “requesting PSAP represents 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 signatory service provider to provide, text-to-911 service (and such authorization is not subject to dispute).”

Additionally, no later than July 1, 2013, the four major providers will “voluntarily provide quarterly progress reports to the FCC, NENA, and APCO summarizing the status of the deployment of a national Text-to-911 service capability.”

17. Under the terms of the Carrier-NENA-APCO Agreement, the major carriers have also agreed to implement a bounce-back message capability by June 30, 2013. The bounce back message will “alert subscribers attempting to text an emergency message to instead dial 911 when text-to-911 is unavailable in that area.”

18. The signatories also agreed on additional measures to implement text-to-911 voluntarily. Specifically, the signatories agree that “PSAPs will select the format for how messages are to be delivered,” and that “incremental costs for delivery of text messages...will be the responsibility of the PSAP, as determined by individual analysis.” Additionally, the signatory service providers agree to implement a 911 short code and agreed to implement text-to-911 “independent of their ability to recover...associated costs from state or local governments.” The signatory providers also agree to “work with APCO, NENA, and the FCC to establish an outreach effort to set and manage consumer expectations regarding the availability/limitations of the Text-to-911 service (including when roaming) and the benefits of using voice calls to 911 whenever possible, and support APCO and NENA’s effort to educate PSAPs on text-to-911 generally.”

19. Finally, the Carrier-NENA-APCO Agreement limits the proposed voluntary text-to-911 solution “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 SMS message.” Thus, the carriers state that under the terms of their voluntary commitment to deploy text-to-911 capability by May 15, 2014, “SMS-to-911 will not be available to wireless

subscribers roaming outside of their home wireless network,” and “[e]ach implementation of SMS-to-911 will be unique to the capabilities of each signatory service provider or its Gateway Service Provider.”

### **III. FURTHER NOTICE OF PROPOSED RULEMAKING**

20. In this Further Notice, we seek comment on issues related to text-to-911 in light of the evolved record, and bifurcate the comment cycles in order to deal most promptly with the consumer notification issue that has the potential to alleviate near-term consumer confusion as to the availability of text-to-911 both during the course of the voluntary roll outs that several carriers have proposed and during the pendency of the Commission’s proceeding. Accordingly, comments with respect to Section III.A will be due 20 days from publication in the Federal Register, and reply comments on Section III.A will be due 10 days thereafter. Comments and reply comments should address only the issues posed in this section in order to provide the Commission with a focused record on this question. Comments and reply comment on the remaining portion of the Further Notice will be due 60 days and 90 days from publication in the Federal Register, respectively. We also seek comment on Section III.C (Legal Authority) as relevant to each section in accordance with the comment timeframe for that section.

#### **A. Automated Error Messages for Failed Text-to-911 Attempts and Consumer Expectations and Education**

##### **1. Automated Error Message Proposal**

21. **Background.** In the Notice, the Commission noted the likelihood that as text-to-911 is implemented, there will be instances where despite efforts to educate consumers, some individuals will attempt to send text messages to 911 in locations where text-to-911 is not supported. The Commission observed that this “could put consumers at risk if they were

unaware that an emergency text did not go through or were uninformed about alternative means of reaching the PSAP.” To mitigate this risk, the Commission proposed that in situations where a consumer attempts to text 911 in a location where text-to-911 is not available, the consumer should receive an automatic error message or similar disclosure that includes information on how to contact the PSAP.

22. Public safety commenters generally support such an automatic notification requirement. APCO argues that “[i]n situations where a consumer attempts to text 9-1-1 in an area that does not support this technology, a standardized auto message should be immediately returned indicating how to contact the PSAP and/or that a voice call is required. The Commission is urged to work with APCO, NENA and NASNA to develop best practices and model responses.” The State of California similarly maintains that “the Commission [should] require any service provider that provides texting capability to its customers to provide an immediate, automatic response (preferably standard nationwide message) to any text-to-911 stating that texting to 9-1-1 is not available and advising the customer to make a voice call to 9-1-1 in an emergency.”

23. In their comments in response to the Notice, commercial mobile radio service (CMRS) providers acknowledge the importance of providing notification of non-delivery to consumers, although some commenters question whether the Commission should adopt a notification requirement. Verizon notes that it already provides an automated message when a wireless customer attempts to send a text message to 911 in a location where text-to-911 is not available. Verizon states that its voluntary practice obviates the need for regulation, but notes that “[s]hould the Commission nevertheless find a requirement is necessary, language like Verizon’s would be sufficient and appropriate.” Sprint argues that before making any decision on this issue, the Commission should first refer the matter to standards organizations “to review the technical

aspects associated with delivering an error message and to develop a consistent error response message.” Finally, textPlus, a software-based text application provider, notes that it already “sends a bounce back message to users alerting the user that the 911 address is not recognized.”

24. Most recently, however, the Carrier-NENA-APCO Agreement states that “[b]efore the deployment of Text-to-911, the signatory service providers will implement a bounce-back (auto-reply) message to alert subscribers attempting to text an emergency message to instead dial 9-1-1 when Text-to-9-1-1 is unavailable...” The Agreement further states that these providers, the four major wireless carriers which include Verizon and Sprint, “will implement the bounce-back...message by June 30, 2013.”

25. Discussion. We propose that CMRS providers and other providers of text messaging services should be required to automatically notify consumers attempting to text-to-911 in areas where text-to-911 is not supported or in other instances where the text cannot be transmitted to the PSAP. In this respect, there appears to be a clear benefit to persons in emergency situations being able to know immediately if a text message has been delivered to the proper authorities. This automatic feedback may be life-saving, allowing a person in need of assistance to immediately seek out an alternative. Providing this type of error message may also be particularly critical during the transition to NG911, as the record to date suggests there are likely to be numerous instances where consumers attempt to send text messages to PSAPs in areas where text-to-911 is not yet available.

26. We disagree with the assertion that there is no need for a bounce-back requirement because certain wireless carriers already voluntarily provide automatic error messages when customers attempt to text-to-911 in areas where it is not supported. Rather, we believe that all CMRS providers and other prospective text-to-911 service providers should implement this

safeguard so that consumers have the assurance that they will receive automatic notification regardless of which provider they choose. While consumer education (as discussed below) may help to mitigate this risk, the possibility remains that without such a requirement, a consumer without knowledge of where text-to-911 is supported could attempt to send a text message to 911 and mistakenly believe that the text has been successfully transmitted to the PSAP.

27. Moreover, in view of the four carriers' commitment in the Carrier-NENA-APCO Agreement to implement a bounce-back message by the end of June 2013, a proactive approach for requiring automatic error messages appears to be feasible at a reasonable cost, especially in comparison to the public safety benefits that an automatic error message can provide consumers. The Carrier-NENA-APCO Agreement states that the four major wireless carriers "will meet [the] commitments [in the Agreement] independent of the [carriers] ability to recover these associated costs from state or local governments." We believe that this representation indicates that the costs for implementing a bounce-back message are manageable, regardless of whether such costs are recoverable under current state or local cost recovery programs. However, we seek comment on this view, particularly in regard to the impact that the costs to meet the bounce-back requirement might have on small and rural CMRS providers compared to the public safety benefits for their subscribers.

28. We seek comment on the appropriate timeframe for CMRS providers to implement a bounce back messaging capability. Whether or not CMRS providers have developed text-to-911 capability, the record to date appears to demonstrate that it is technically feasible for them to provide an automated "bounce-back" text message in such circumstances instructing the sender to make a voice 911 call, and that many carriers already provide this message voluntarily. We recognize that CMRS providers other than the four major carriers may need to address certain

technical and operational issues in order to meet our proposed notification requirement.

Nevertheless, we believe that a solution should be implemented as quickly as possible to avoid the risk of consumer confusion. Accordingly, we seek comment on whether it is feasible for all CMRS providers to provide their customers with an automatic notification by the June 30, 2013 date specified in the Carrier-NENA-APCO Agreement. We seek comment on this timeframe, and any significant technical issues that would bear on the achievability of an automatic error message within that time frame by small, regional, or rural CMRS providers.

29. We also propose to require prospective providers of interconnected text service to develop an automated error message capability. In order to reduce potential consumer confusion and enhance the ability of consumers to communicate by text in emergencies using the applications they are most familiar with from everyday use, we believe that the “bounce-back” requirement proposed for CMRS providers above should also apply, to the extent feasible, to all providers of software applications that enable a consumer to send text messages to text-capable U.S. mobile telephone numbers and receive text messages from the same when a user of the application attempts to send an emergency text in an area where text-to-911 is not supported or the provider is otherwise unable to transmit the text to the PSAP.

30. We clarify that we do not propose to extend text-to-911 obligations to IP-based messaging applications that support communication with a defined set of users of compatible applications but do not support general communication with text-capable telephone numbers. We believe it is less likely that consumers will expect such applications to support emergency communications. Nevertheless, we encourage providers of such messaging applications to inform their users that these applications do not support communication to 911. We seek

comment on this approach. Are there other “flavors” of third-party text messaging applications that should not be included? Why?

31. We seek comment on the feasibility and cost of third-party providers to implement such an automatic notification and whether they must address any unique technical issues not faced by CMRS providers in executing this requirement. We also seek comment on whether it is feasible timeframe for third-party providers to implement the automatic notification requirement by June 30, 2013, or whether we should adopt a longer timetable.

32. We clarify that with respect to both CMRS providers and interconnected text providers, our proposed requirement for automatic notification to consumers would only apply to situations where the provider (or the provider’s text-to-911 vendor) has direct control over the transmission of the text message and is unable to transmit the text message to the PSAP serving the texting party’s location, whether due to network congestion, the inability of the PSAP to accept such messages, or otherwise. Thus, for example, a CMRS provider would not be required to provide automatic notification where the consumer uses a text application provided by a third party that the carrier does not control. Similarly, notification would not be required where the provider is able to transmit the text to the PSAP, but a failure in the PSAP network results in the text not being delivered to a 911 operator. We seek comment on our proposal. We also clarify that we do not propose to require all text-to-911 providers to use the exact same wording for their automatic error messages to consumers. Rather, we propose that providers would be deemed to have met our requirement so long as the error message includes information on how to contact the PSAP. For example, an automated message that advises the consumer to place a voice call to 911 would meet the proposed requirement. We would, however, encourage carriers to work with public safety organizations and consumer organizations, including disability organizations, on a

common error message text to simplify consumer education. We seek comment on this approach.

## 2. Consumer Expectations and Education

33. Background. The Notice sought comment on how to ensure that consumers are informed about the availability and non-availability of text-to-911 in specific areas. Specifically, the Notice sought comment on the expected costs and benefits of various approaches to consumer education and disclosure mechanisms, whether contractual or cost considerations would deter consumers from texting or sending photos or video to 911, and if so, whether providers or the Commission should develop practices to remedy that situation. It also sought comment on what types of educational programs could be created to reduce and/or prevent consumer confusion as text-to-911 is deployed in the short term, what the appropriate role is for the Commission and for other government and private sector entities in any public education effort, and whether other resources could be developed to help individuals learn about where text-to-911 services are and are not available.

34. Public safety commenters generally agree that there is a significant need for a nationwide effort to educate the public and prevent consumer confusion while text-to-911 is being rolled out. For example, the North Central Texas Council of Governments (NCTCOG) conducted a recent survey which noted that approximately one-third of their population believe they can text 9-1-1 today. APCO argues that “NG9-1-1 and the capabilities for data and multimedia will require a focused and funded public education plan. Consumers must be made aware of the limitations of 9-1-1 location accuracy and they must be cognizant of the role that they need to play in ‘managing their emergency.’” APCO urges the public and private sector to “unite to provide a national campaign targeted at public education of NG 9-1-1 as it becomes available,” and offers

to help “craft and disseminate an agreed upon curriculum.” NASNA supports focusing educational efforts on “discrete groups that would receive substantial and meaningful benefits” from near-term deployment of text-to-911, “such as the deaf and hard of hearing.” NASNA suggests these focused educational efforts “could provide a model when texting-to-9-1-1 is deployed on a permanent basis.” NENA “encourages the Commission” to implement a campaign to “provid[e] states, regions, and localities with template materials such as canned video, audio, and print materials” that “could provide enormous economies of scale...and help local 9-1-1 systems and centers to effectively educate the public about the roll-out of new system capabilities.” NENA also contends that “it is imperative that any text-to-9-1-1 solution that relies on a digit string or short code incorporate the digits ‘9-1-1’” because “[d]oing so will help to minimize consumer confusion and reduce public education costs.”

35. Industry commenters also stress the importance of consumer education and the need for both public and private sector participation in education efforts. CTIA stresses that “consumer education requires that federal and state entities, as well as Public Safety agencies and consumer representatives, participate in the consumer education process, and that the responsibility not be left solely to the wireless industry.” CTIA also supports the concept presented in the Notice of developing a consumer-focused map or website that would provide information on the text-capability of specific PSAPs, but notes that “the cost of developing and updating such resources is an issue that should be considered in developing a map or similar consumer education campaign.”

36. Discussion. We agree with commenters that educating the public is critical to the successful roll-out of text-to-911 and preventing consumer confusion. Adding text capability to the 911 system is not likely to occur uniformly: during the transition period, the availability of

text-to-911 will vary by area, and the areas of availability will change over time as the transition progresses. The Carrier-NENA-APCO Agreement recognized this and the signatory providers agreed to “work with APCO, NENA, and the FCC to develop an outreach effort to set and manage consumer expectations regarding the availability/limitations of the Text-to-911 service (including when roaming) and the benefits of using voice calls to 911 whenever possible, and support APCO and NENA’s effort to educate PSAPs on Text-to-911 generally.” Therefore, as we initiate the transition, a concerted effort will be needed to provide the public with accurate and up-to-date information regarding where text-to-911 is – and is not – available.

37. Aside from educating the public about the availability or unavailability of text-to-911, education is also imperative to inform the public about the capabilities and limitations of text-to-911 where it is available, and the circumstances under which texting 911 is or is not preferable to making a 911 voice call. The public needs to be aware that text may not provide all of the features and functionalities associated with voice 911 service, such as automatic location. Similarly, the public needs to be aware that, while sending an emergency text may be preferred in instances where the sender is unable to communicate by voice (e.g., due to a speech or hearing disability, or in a hostage or abuse situation where voice calling could be dangerous to the caller), in most other instances, placing a voice call to 911 will continue to be the most effective means of communicating with emergency responders, and therefore will remain the strongly preferable option even where text is available.

38. Given the clear need for consumer education, we direct the Public Safety and Homeland Security Bureau and the Consumer and Governmental Affairs Bureau 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 voluntary measures taken under the Carrier-NENA-APCO Agreement. To assist in the development of this program, we seek comment on what educational tools and resources exist or need to be developed to combat consumer confusion as text-to-911 is deployed. To what degree can current 911 educational programs be adapted to help consumers understand the availability, capability, and appropriate use of text-to-911? How do we ensure that education and outreach efforts on text-to-911 are fully accessible to people with disabilities? Are there lessons that we can draw from educational efforts that were conducted during the deployment of basic 911 or E911 service? Have other countries developed text-to-911 education programs?

39. We also seek comment on whether CMRS and interconnected text providers should provide educational information to their subscribers about the availability and use of text-to-911. The signatory providers in the Carrier-NENA-APCO Agreement agreed to work with APCO, NENA and the Commission to develop an outreach effort to “set and manage consumer expectations” regarding text-to-911. Should carriers also provide information regarding the text-to-911 capabilities of specific wireless devices that operate on their networks?

40. Would it be feasible to provide consumers with the ability to test text-to-911 functionality in their devices? Allowing customers to send simulated or test 911 messages could have benefits by enabling customers to verify the availability of text-to-911 and familiarize themselves with its use. However, any test mechanism would need to be configured to avoid burdening PSAPs with unnecessary text messages, e.g., by having the carrier or 911 text services provider reply to test messages with an automated response. We seek comment on technical and cost issues associated with developing such a test capability.

41. Who should bear the primary responsibility for educating consumers on the limits of text-to-911? The Commission? CMRS and interconnected text providers? Public safety organizations? Should the Commission establish a joint effort in conjunction with CMRS and interconnected text providers and public safety to implement an education effort? To what extent should consumer groups, including organizations representing the interests of people with disabilities, be included in such efforts? Should the educational effort be federal, regional, state, or local-level? What safeguards and measures should be taken to ensure that education and outreach efforts on text-to-911 and its limitations are fully accessible to people with disabilities? Can the ability to send test text messages to a PSAP facilitate consumer education? Could the database described in Bandwidth.com's comments be used to automatically generate up-to-date consumer-facing maps of where text-to-911 is available?

B. Comprehensive Text-to-911 Proposals

1. Further Background

42. The Commission has previously highlighted the popularity and ubiquity of text messaging, the increasing public expectation that consumers should be able to text to 911 during an emergency, and the importance of text to 911 for people with disabilities. American consumers send billions of SMS text messages per day and more than two-thirds of mobile phone users have used text messaging. Moreover, many of these consumers are acquiring advanced mobile devices (e.g., 3G and 4G devices) that enable them to send text messages using "over-the-top" software applications that they install on their phones and other mobile devices. Additionally, text messaging will likely play an integral role in providing future 911 services for persons with communications disabilities. Hence, any discussion about the near-term

deployment of text-to-911 must consider both SMS and currently available, as well as anticipated, software applications as potential platforms.

43. The record in response to the Notice indicates that NG911 will eventually be capable of supporting the full range of possible multimedia-to-911 communications, including transmission of text, photos, video, and data. However, due to the complexity and cost of deploying NG911 infrastructure on a national scale, full deployment of NG911 will not be uniform and will likely take years. At the same time, the record indicates that it is technically feasible for CMRS providers to implement text-to-911 using existing technologies prior to full deployment of NG911, as evidenced by the successful trials and demonstrations noted above, the University of Colorado and Intrado technical studies, and the fact that the four largest nationwide wireless carriers committed to deploy text-to-911 capability throughout their networks by May 15, 2014. Thus, text-to-911 could be made available to virtually all wireless customers in the near term and delivered to both “NG-capable” and “pre-NG” PSAPs at a reasonable cost to wireless carriers.

44. As discussed below, we believe that enabling consumers to send a text message to 911 in the near term will substantially improve accessibility to emergency services, particularly for people with hearing and speech disabilities. While we recognize that text-to-911 based on pre-NG technologies does not provide the full functionality of NG911-based text, and that it has certain limitations in comparison to voice-based 911, we believe that these limitations are outweighed by the substantial public safety benefits that near-term implementation of text-to-911 would yield. In addition, implementing text-to-911 in the near term will provide valuable real-world operational experience that will help consumers, PSAPs and service providers plan for full NG911 deployment. Moreover, the availability of text-to-911 will provide incentives for PSAPs to acquire Internet Protocol (IP) connectivity and NG911-capable customer premise equipment

(CPE), which are both critical steps towards the full deployment of NG-911. We seek comment on these observations.

45. We also believe that adopting a mandatory regulatory framework and timetable for implementation of text-to-911 is necessary. We recognize that substantial progress has been achieved through the voluntary initiatives of the four major CMRS providers, 911 service providers, and PSAPs described above. However, we are concerned that continuing to rely solely on voluntary measures could result in the four major CMRS providers implementing text-to-911 while other service providers – including regional, small, and rural CMRS providers and third party interconnected text providers – do not, or could lead to non-uniform and uncoordinated implementation, inconsistent technological approaches, and widely varying implementation timelines to the detriment of consumers. This in turn could lead to a longer transition period, increased transition costs, and increased consumer confusion regarding when and where text-to-911 will be supported, what functionality it will provide, and when and how consumers should use it where it is available. We seek comment on this analysis.

46. Public safety commenters made a number of ex parte submissions in the record highlighting the importance of deploying text-to-911 services. NENA conducted a comprehensive study and reported that the majority of its chapters would support a requirement for wireless carriers to provide text-to-911 services to their customers. APCO argued that “deferring action on the basic [text-to-911] requirement would only lead to uncertainty and delay serious consideration of implementation issues and requirements.” NCTCOG submitted an ex parte noting that the public expects to be able text-to-911 and highlighted that “a recent market study...showed that approximately 1/3 of our population believe they can text 9-1-1 today.” The Maine Public Utilities Commission noted that “increasingly [persons with disabilities are]

abandoning the use of TTYs for new technologies such as text messaging that allow them more flexibility to communicate with most others except 9-1-1.”

47. We believe that a mandatory regulatory framework that builds on existing voluntary initiatives will mitigate these risks by providing a common deadline for the implementation of text-to-911. Moreover, while under our proposal PSAPs will still have the option to choose whether to accept text messages, greater uniformity in availability will enhance PSAP options and make it easier to justify investments in upgrades. Uniformity will also promote coordinated and consistent deployment by establishing a set of baseline requirements for all CMRS providers and third-party interconnected text providers to meet. Finally, it will provide greater certainty to consumers regarding text-to-911 availability, functions, and usage. Given these substantial benefits, we believe that the public interest is served by requiring CMRS providers and third-party interconnected text providers to supply text-to-911 capabilities to their customers on all text-capable devices. We seek comment on this analysis and on possible timelines and technical options for implementation of these proposed requirements.

## 2. Public Safety Benefits of Text-to-911

48. The record indicates that text-to-911 can offer significant public safety benefits, most notably: (1) widespread consumer availability and ease of use, (2) enhanced accessibility to 911 for people with hearing and speech disabilities, and (3) an alternative means of emergency communication for the general public when 911 voice service is unavailable or when voice calling could endanger the caller. We note that text-to-911 service may also permit “text-takers” to open multiple texts and prioritize the most life-threatening situations first, rather than waiting to address calls based simply on the order in which they arrived.

### a. Availability and Ease of Use

49. The effectiveness of the legacy voice 911 system derives in large part from its ease of use by consumers, and their familiarity and comfort with voice calling on everyday devices. It is much easier for people faced with the stress of emergency situations to communicate quickly and effectively when they are able to use the same technologies that they use for everyday communications. This principle, which has long applied to voice calling, is increasingly true for communication by text as well. More than 2 trillion text messages are sent annually and according to the Pew Center, more than 7 out of 10 cell phone users send or receive text messages. Another report suggests that 91 percent of smartphone owners actively use SMS. Thus, expanding existing text technology to support 911 will provide the public with a familiar mode of communication for emergency use.

b. Enhanced Accessibility for People with Disabilities

50. Currently, approximately 15 percent of the United States population, or 34.5 million people, have hearing disabilities and approximately 7.5 million people have difficulty using their voices. Moreover, there is a strong relationship between age and reported hearing loss. For example, 18 percent of American adults 45-64 years old have a hearing loss, 30 percent of adults 65-74 years old have a hearing loss, and 47 percent of adults 75 years old or older have a hearing loss. 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 accessing 911. Further, an increasing number of soldiers are returning from overseas and are experiencing traumatic brain injury, which can result in hearing or speech disabilities.

51. Title II of the Americans with Disabilities Act (ADA), enacted in 1990 requires PSAPs to provide persons with hearing or speech disabilities with direct access to 911 emergency services. Since 1991, the U.S. Department of Justice (DOJ) has implemented this provision by requiring

all public safety agencies to make their telephone emergency services directly accessible to TTYs. In the Notice, however, the Commission explained that people with hearing and speech disabilities have increasingly migrated away from specialized legacy devices, such as TTYs, and towards more widely available forms of text communications because of the ease of access, availability, and practicability of modern text-capable communications devices. While the migration to widely available texting technologies has had the unique benefit of bringing prior TTY users into the mainstream of our nation's communications systems, this transition has also led some commenters to suggest that it leaves people with hearing and speech disabilities without an effective, reliable and direct means of accessing 911 services in the event of an emergency.

52. The EAAC noted that individuals who cannot hear or speak well enough to communicate with 911 currently have no direct means of accessing 911 when mobile other than TTYs. However, with the vast majority of people with hearing and speech disabilities having discarded their TTYs, these devices are no longer considered a viable means of directly accessing 911 for this population. Nevertheless, the EAAC found that many individuals who are deaf have service plans that include SMS. 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."

53. At present, individuals with disabilities who have stopped using TTYs often have no other option but to rely on telecommunications relay services (TRS) to access 911 emergency services. Text-based relay services generally require an emergency call to first go to a communications assistant (CA), who places the call to the PSAP. The CA then relays the conversation back and forth between the caller and the PSAP, by voicing all text that is typed by the person with a disability to the PSAP call taker and typing back responses to the caller. As

such, many have criticized TRS as providing only an indirect means of conveying information that may result in delays and translation errors during an emergency. For example, Consumer Groups note that IP-Relay, one text form of TRS, has not been widely embraced by the deaf and hard of hearing community for requesting emergency services because of 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 will generally arrive on a non-emergency line, and the possibility of mistakes by the CA in the relaying of the call.

54. The record in this proceeding and the EAAC Report make clear that a significant number of people with hearing and speech disabilities will benefit from the ability to directly send a text message to 911 from any device that is text-capable. Advocates for and individuals who are deaf and hard of hearing strongly support implementation of a near-term text-to-911 solution and disfavor text relay approaches due to the risk of delay and translation errors. Moreover, enabling direct text messaging to 911 by people with hearing and speech disabilities will allow this population to use mass market communication devices that have increasingly evolving capabilities. While disability advocates have previously been skeptical of SMS-to-911 because it does not support real-time text, they have given more recent support to SMS as a viable near-term solution because of its familiarity and ease of use for people with disabilities. Respondents to the EAAC survey expressed a clear preference for calling a PSAP using the same technology that they use on a daily basis. Moreover, 87.7 percent of respondents reported having used SMS text messaging and 46.1 percent reported having used SMS text messaging “almost every day.”

55. Consumer Groups similarly urge the Commission to require the deployment of SMS-to-911 technologies in the near term as a rapid and practical means of significantly enhancing accessibility to the 911 system for people who are deaf and hard of hearing. Consumer Groups

point out that because consumers have already embraced SMS technology, and the vast majority of wireless providers and manufacturers support SMS, this capability may be deployed rather quickly. Likewise, the Wireless Rehabilitation Engineering Research Center (RERC) “strongly supports” the incorporation of SMS for the initial deployment of an NG 911 system. Similarly, the RERC on Telecommunications Access notes that it is imperative for the Commission to ensure that mobile text communication is available in the near term to people who are deaf.

c. Alternative Means of Emergency Communication for the General Public

56. The ability to send text messages to 911 will also provide an important alternative means of emergency communication to the benefit of the general public. While the general public will not need to use text-to-911 services as frequently as people with hearing and speech disabilities, experience has shown 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 911 so as not to be heard and located by the shooter. Similarly, in the Black Hawk County, Iowa text-to-911 trial, text has been used in domestic and child abuse situations in which the victim feared that the suspect would overhear the call to 911. Additionally, the Vermont trial further demonstrated text-to-911’s efficacy in cases involving suicide and domestic violence.

57. Text-to-911 can also provide a lifeline when voice networks are impaired or congested. In large-scale disasters, for example, circuit-switched landline and mobile networks may become overloaded, making it difficult to place a 911 voice call. Conversely, SMS and IP-based text messages to 911 can still be transmitted because text consumes far less bandwidth than voice and may use different spectrum resources and traffic channels. As TCS notes, “[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.” TCS further notes that according to data it had drawn from its CMRS provider customers, attempts to text-to-911 are made regularly and the number of attempts to text-to-911 during the recent Hurricane Sandy spiked sharply. TCS also highlights that unlike phone calls that are be handled on a “first-in, first-addressed” basis without any ability to know which queued up calls are priorities, a single “text-taker” could open more than one text and “attempt to address the more urgent and life-threatening emergencies with greater priority.” In addition, the University of Colorado finds that “text users and call takers compose and read messages offline and only use communication for the moment that the message needs to be sent [which] saves valuable network resources during network congestion.” Thus, people in disaster areas may still be able to send text messages to 911 even if they cannot place a voice call.

### 3. Technical Feasibility, Timing and Cost of Text to 911

58. Balanced against the above-described benefits of text-to-911, we believe that the record indicates that text-to-911 is technically feasible and can be achieved in the near term at a reasonable cost to PSAPs, CMRS providers, and providers of interconnected text. We disagree with commenters who argue that the Commission should not act until NG911 is fully deployed. As we note above, it will likely take a number of years to deploy NG911 on a national scale. The record also indicates that it is technically feasible for CMRS providers to implement a text-to-911 solution using existing technologies prior to the full deployment of NG911, and we believe the same should be true for interconnected text providers. Thus, text-to-911 could be

made available to virtually all wireless customers in the near-term and delivered to both “NG-capable” and “pre-NG” PSAPs at a reasonable cost to wireless carriers. In this respect, we also believe that investments made now by PSAPs and carriers to support text-to-911 can be leveraged to support NG911 deployments, and accordingly constitute building blocks towards an IP-based emergency network. For example, while some PSAPs may choose to implement text-to-911 through existing equipment, such as TTY terminals, other PSAPs may choose to upgrade their equipment to receive text messages in a manner that will also support additional data in an NG911 environment.

59. We disagree with MetroPCS’s argument that any text-to-911 obligations should “only be imposed on the largest nationwide carriers because the costs of increased regulations are more easily borne by the largest carriers.” There is no evidence that the cost of implementing a text-to-911 solution will be substantial enough to warrant limiting the obligation to the largest carriers. In fact, the first text-to-911 trial in the nation was conducted in Black Hawk County, Iowa by a small wireless carrier. Further, we believe that exempting certain wireless carriers from a text-to-911 obligation solely on the basis of size would create additional consumer confusion, because consumers would still be unsure of whether their wireless carrier provides text-to-911 service or not. We seek comment on these views.

60. Based on these findings and consistent with the Carrier-NENA-APCO Agreement, we propose that all CMRS providers and interconnected text providers should be required to implement the capability to support text-to-911 in their networks. Because SMS is the most common texting technology in use today, and virtually all wireless consumers already have access to it and are familiar with its use, we expect that most CMRS providers will initially support SMS-based text-to-911. At the same time, we recognize that CMRS providers may

eventually seek to migrate customers away from SMS to other text applications, such as IP-based real-time text or Rich Communication Services (RCS). Therefore, we do not propose to require CMRS providers to support SMS-based text-to-911 so long as they provide their customers with at least one pre-installed text-to-911 option per device model that works across the provider's entire network coverage area. We propose to allow CMRS providers to select any reliable method or methods (e.g., mobile-switched, IP-based) for text routing and delivery. We seek comment on this proposal.

a. Impact on PSAPs

61. As noted above, public safety commenters generally support the implementation of text-to-911 in the near term as a first step in the transition to NG911. NENA notes that SMS is “the prevailing consumer text mode in the United States,” and that in addition to being the most widely available platform, SMS “is also the most interoperable, working between nearly every device on every network in the United States.” NENA also notes that Verizon's text-to-911 announcement indicates that “SMS-to-911 capabilities can be technically feasible.” NATOA, NACo, and NLC state that they support the use of SMS as “an interim solution for text-based communication to 911,” since it is “particularly beneficial to people with disabilities, including people who are deaf, hard of hearing, or have speech impediments.”

62. Black Hawk County highlights that it has not encountered any text-related problems during its trial and notes that “SMS text-to-911 is reliable and available, as clearly demonstrated in our project.” BRETSA and the Colorado 9-1-1 Task Force state that “the key advantage of text messaging to 9-1-1 will be in facilitating communications with the PSAP by speech and/or hearing impaired individuals. Text messaging is generally preferred by the speech and hearing impaired community over TTY communications because it is more portable, ubiquitous, and

convenient.” Vermont argues that fears over the volume of emergency text messages are “overblown” and “remain[s] convinced that those who can make a voice call will make a voice call as that is the most efficient way to communicate in an emergency.”

63. While public safety entities generally regard near-term text-to-911 as feasible, some express concern about the potential cost of implementation and the impact on PSAP resources if text-to-911 results in a heavy influx of text messages. The State of California states that “[s]hort-term implementation of text-to-911 will likely increase the time and resources required for PSAPs to process information as compared to handling voice calls.” APCO states that “[w]hile SMS may be appropriate as a near-term solution for limited circumstances, it is not a long-term solution for the general public.” NASNA opposes encouraging wide-spread deployment of short-term SMS-based solutions “[u]ntil such time as text-delivery standards are developed, adopted and compliance is assured.” Finally, BRETSA and the Colorado 911 Task Force argue that “devoting funds to an interim solution for text messaging may mean that less funds will be available in the future for a more effective solution, once NG9-1-1 has been deployed and PSAP systems updated to take advantage of NG9-1-1.”

64. Based on the record in this proceeding, the Carrier-NENA-APCO Agreement, and the success of the various technology trials noted above, we believe that the implementation of text-to-911 will not impose an undue burden on PSAP operations. First, under our proposed framework, PSAPs will retain the discretion to decide whether to accept text messages. Thus, if a PSAP chooses not to accept text messages, there would be no requirement for it to do so and therefore no cost to the PSAP. We believe that PSAPs are able to best understand their local technological and financial situation, and determine whether it is technically and financially feasible or desirable to implement text-to-911 in their service area. While we share BRETSA

and the Colorado 911 Task Force's funding concerns, we believe that PSAPs will be in the best position to understand their ongoing NG911 funding needs. Additionally, as much of the architecture for text-to-911 service can be leveraged for NG911, we do not expect that funding text-to-911 will divert resources from funding future NG911 services. Second, as discussed in greater below, for PSAPs that elect to accept text messages, we propose several options for the receipt of text messages, including options that will impose minimal costs on the PSAP. Third, while we recognize that the technology trials noted above are limited in scope, the trial results suggest that PSAPs are not likely to become overwhelmed with text messages.

b. Impact on CMRS Providers and Interconnected Text Providers

65. In response to the Notice, CMRS commenters initially opposed a near-term text-to-911 mandate and argued that the Commission should instead focus its efforts on long-term NG911 solutions. These commenters cited a variety of concerns with implementing text-to-911 prior to the full development of next-generation solutions, including technical limitations, limited monetary resources, reliability and security, issues with consumer education, and liability protection. Notwithstanding some of these concerns, however, the four major wireless carriers voluntarily committed to deploy text-to-911 capability throughout their nationwide networks by May 15, 2014.

66. Further, the record indicates that the cost for CMRS providers to implement a text-to-911 solution will be minimal. Indeed, according to cost estimates that were submitted into the record by Intrado and Bandwidth.com, the total cost for all CMRS providers to implement this solution will be approximately \$4 million annually. Based on our review of the record, the Carrier-NENA-APCO Agreement, the cost estimates provided by vendors, and the success of the text-to-911 trials and demonstrations, we believe that it is feasible for all CMRS providers to cost-

effectively implement a text-to-911 solution in the near term. We seek comment on this view. We also seek comment below on the appropriate timetable for implementing our proposal in order to address the concerns raised by CMRS commenters. We also seek comment on the cost for interconnected text providers to implement a text-to-911 solution. More specifically, what are the likely initial and ongoing costs for interconnected text providers? For routing purposes, can interconnected text providers use the same service providers as CMRS providers? If so, would the cost be similar? Would a per-incident service model be feasible for smaller interconnected text providers? Are there any other potential costs that the Commission should consider? To that end, we seek quantitative information for our cost-benefit analysis.

#### 4. Cost-Benefit Case Study

67. States and localities collect approximately \$2 billion in 911 fees and taxes annually for the operation and support of the legacy voice-based 911 system. Most states have reported to the Commission that “they used the fees or surcharges that they collected for 911/E911 service solely to fund the provision of 911/E911 service.” Dependent on the regulatory mechanism set forth in each statute, states distribute funding either to the carriers directly, or to a designated state or local entity which then reimburses carriers. As we have noted previously, the highest vendor estimate submitted in this record regarding the cost to carriers to implement nationwide text-to-911 capability is \$4 million annually, a mere fraction of the cost of the current voice 911 system.

68. Balanced against this low cost, the implementation of text-to-911 will provide substantial benefits both for people with disabilities and the general public in a variety of scenarios. While not all of the benefits associated with these scenarios are quantifiable, we have conducted a cost-benefit analysis of the potential impact of text-to-911 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. Even when we limit our analysis of benefits to this subset of total emergencies, we find that the potential benefits of text-to-911 for just this one category of 911 calls outweighs the costs of implementing text-to-911 for all carriers and PSAPs. We seek comment on our case study analysis below.

69. Our analysis is based on a 2002 study of cardiac emergencies in Pennsylvania that found adoption of E911 to be associated with improvements in the health status of patients, particularly those with cardiac conditions. That Cardiac Study shows that, when precise location information is provided contemporaneously with a 911 call, response time is notably shortened and correlated with an over 34 percent reduction in mortality rates from cardiac arrest within the first 48 hours following the incident.

70. The life-saving benefits demonstrated in the Cardiac Study provide a useful reference point for assessing the importance of timely and effective 911 communication to response time and positive outcomes for medical emergencies. We therefore have extrapolated from the Cardiac Study to determine the likely number of cases in which text-to-911 might extend similar benefits to people with hearing and speech disabilities who cannot use voice to contact 911, but who would be able to communicate location information if text were available.

71. Based on the Cardiac Study, we calculate that for the voice-based 911 system as a whole, improved response time resulting from delivery of precise location information saves approximately 4,142 lives annually nationwide. To determine the proportionate benefit for people with disabilities that would result from availability of text-to-911, we consider only the 0.7 percent of the population with the most severe hearing and speech impairments (0.5 percent for extreme hearing difficulty and 0.2 percent for extreme speech difficulty). Assuming a

proportional number of 911 calls in cardiac emergencies from this population, and limiting our calculation to intentional wireless calls in which the hearing- or speech-disabled person cannot rely on a speaking person to make the 911 call, we calculate that text-to-911 would save approximately 7 lives annually in cardiac emergencies. Using an accepted statistical value-of-life model developed by the U.S. Department of Transportation, we estimate the value of each life saved to be \$6.2 million. This yields a total benefit of \$43.4 million annually for cardiac victims alone, or more than ten times the highest estimated cost of the rules proposed herein.

72. We emphasize that the benefits calculated above for cardiac emergencies represent only a subset of the benefits that will be generated by text-to-911. The record reflects numerous other benefits that are less quantifiable but that may be similarly or even more substantial. Black Hawk County and Vermont have cited concrete examples where text-to-911 enabled callers to reach 911, but could not make a voice call for safety reasons. Similarly, the record includes additional compelling evidence that text-to-9-1-1 may provide significant benefits in disaster scenarios due to the relatively high reliability of SMS messages and the relatively low amount of network capacity required to deliver an SMS message. These benefits, though not specifically quantifiable, provide compelling evidence that the aggregate benefits of text-to-911 will significantly exceed the specific benefits quantified here – and will be generated at no additional cost.

#### 5. Reliability of Text-to-911

73. In response to the Notice, several commenters raise concerns about the reliability of text-to-911, and particularly SMS-based text. 4G Americas notes that “it found no short-term solution that did not exhibit limitations with respect to capability, performance, and impacts to users, network operators and/or PSAPs.” CTIA states that “SMS was not designed to be used as

an emergency service” and urges the Commission to focus on the deployment of “advanced 9-1-1 emergency communications services in emerging wireless technologies.” Other commenters similarly assert that certain technical aspects of SMS limit its reliability for emergency communications. Among the factors cited are that SMS (1) is one-way rather than session-based; (2) lacks delivery or performance guarantees, and may not inform the sender when a text is not timely delivered; (3) does not prioritize emergency messages; (4) does not assure that multiple messages will arrive in the sequence they were sent; (5) does not support 911 location technologies that are used for 911 voice calls; and (6) lacks protections against transmission of spurious or fraudulent 911 messages.

74. Technical Studies. In response to the Notice, two commenters conducted technical studies which present evidence that SMS-to-911 is as reliable as voice, and in some instances, may be even more reliable than voice. In the first study, researchers at the University of Colorado tracked several hundred SMS text messages and found that “the reliability of text messages and mobile phone voice calls, in terms of data loss, are very similar.” The University of Colorado study “found that all of the text messages sent were received by the cellular network, resulting in a ‘data loss rate’ of 0% and a reliability level of 100%.” In addition, the University of Colorado study noted that “[o]ther researchers have tested the reliability of...SMS...and found that the ‘data loss rate’ over several thousand messages was less than 1%, resulting in a reliability level of 99%. The statistical implication is that large samples might experience a small percentage of data loss, but overall the reliability for text messages is similar to that of voice calls.” 4G Americas criticizes the University of Colorado’s findings and notes that the “study was executed in an academic environment with a pre-determined technology and

setting. The study did not involve a large number of subscribers, and hence, no real-world traffic conditions.”

75. The University of Colorado study also found that text messaging is actually more reliable than voice communications when a weak signal exists, “such as when the caller is in the mountains, in the midst of high rise buildings, inside a building, under a collapsed building following an earthquake or explosion, or in a trunk of a car [or] closet.” The University of Colorado notes that “[c]ommunication at the edge of coverage can be sporadic, allowing only momentary windows of communications coverage that are not long enough to support a voice call but a short burst of a text message can get through. In addition, some implementations of SMS automatically keep trying to send a text message until a transmission window opens.”

76. Intrado conducted the second technical study, in which it sent “tens of thousands of actual SMS messages [from] a simulated PSAP to a mobile device and from a mobile device to the simulated PSAP.” The study found that “by using techniques such as the 9-1-1 SMSC [short message service center], SMS can be used to create a very reliable and timely 9-1-1 communication infrastructure.” According to Intrado, “90% [of the text messages] were delivered within 3-4 seconds.”

77. Discussion. While 4G Americas, CTIA, Motorola, and several other commenters provide anecdotes about the limited reliability of SMS-to-911, the University of Colorado and Intrado conducted the only two technical studies on this issue. Notably, both of these studies found that the reliability of SMS-to-911 is comparable to voice, and in some instances, even more reliable than voice. Further, we believe that the success of the existing trials, the Carrier-NENA-APCO Agreement, and the continued rollout of text-to-911 services throughout the nation demonstrate that industry has already overcome many of the reliability deficiencies that

were originally cited in the comments. While SMS was certainly not designed for emergency communications, we disagree with T-Mobile's claim that "SMS is fundamentally unsuited for emergency communications." Indeed, a life was saved in Vermont as a direct result of Verizon's SMS-to-911 trial. Additionally, we note that, for callers who are deaf or hard-of-hearing, reaching 911 by voice may not be possible at all, so that even a mechanism that is not perfectly reliable can provide significant benefit. For callers who are not deaf, text-to-911 provides an additional way to reach PSAPs, thus increasing the overall probability of obtaining help. Finally, we believe that our proposal for wireless carriers to provide a "bounce-back" capability will further mitigate reliability concerns. Accordingly, given the significant benefits of text-to-911 service, we do not believe that reliability concerns should delay the deployment of text-to-911. We seek comment on this analysis.

#### 6. Carrier and Third Party Non-SMS-Based Text-to-911 Applications

78. As technology and consumer habits evolve, consumer expectations also change and the need to meet those expectations in times of emergency must also evolve. As more consumers use SMS-substitutes, whether provided by the underlying carrier or by a third party, it is important that we evaluate ways to alleviate consumer confusion and promote regulatory parity. We note, however, that despite this proliferation of SMS-substitutes, the Carrier-NENA-APCO Agreement is limited to SMS services provided by the signatory providers.

79. Accordingly, as discussed below, we are seeking comment on a variety of issues associated with non-SMS messaging applications, including "over-the-top" texting applications provided by third-parties. In this regard, our focus is on those applications that are most like SMS and therefore most likely to be the subject of a consumer expectation that they may reach

911, namely those two-way texting applications that allow text messages to be sent to any U.S. phone number, irrespective of the hardware utilized to send that message.

80. Background. In the Notice, the Commission sought comment on non-SMS text-to-911 alternatives, including IP-based messaging, real-time text, and downloadable software applications. While noting the potential advantages of SMS as an interim solution, the Commission also sought comment on how to encourage the development of non-SMS options that could provide more flexibility and functionality to consumers.

81. Commenters generally support allowing carriers and service providers to develop alternatives to SMS-based text. NENA notes that smartphone-based text-to-911 applications could lower costs for both consumers and PSAPs and that “because 9-1-1 text applications would run on smartphones or advanced devices, their call streams could, in some instances, operate outside the normal 911 voice call path.” The University of Colorado observes that “there are an increasing number of smartphone applications and other SMS short cuts that provide for pre-stored and automatically composed messages, such as contact information for an epileptic having a seizure, or to include location [GPS] coordinates.” Bandwidth.com notes that applications can be “specifically geared toward enhancing the ability of the deaf and hard of hearing to access public safety via texting.” LR Kimball states that “[s]oftware applications that can integrate into the legacy 911 system should be the first choice in the short term to allow for more complete access. . . . [and] should be developed in a way that makes use of services currently in use at PSAPs.” AT&T urges the Commission to avoid imposing text-to-911 regime that would force carriers to continue supporting SMS-based text-to-911 after SMS has become technologically obsolete or economically uncompetitive.

82. In the Notice, the Commission also observed that consumers are acquiring more advanced mobile devices (e.g., 3G and 4G handsets) that enable them to install “over-the-top” software applications. In the Notice, we sought comment on whether text-to-911 requirements should apply to both CMRS and non-CMRS providers alike. The Commission sought comment on the feasibility of using general texting or 911-specific software applications to send text messages to PSAPs. The Commission noted that both providers and third parties, including vendors that provide services and equipment to PSAPs, could develop such applications.

83. In response to the Notice, CTIA and AT&T noted the proliferation of “over-the-top” software applications and highlighted the need for the Commission to implement technology neutral regulations that apply equally to both carrier-provided and non-carrier-provided texting solutions. CTIA stated that “it is . . . unclear how a national SMS-based interim solution would work in the context of over-the-top applications or other non-carrier-provided SMS solutions” and emphasizes that “the [FCC] must . . . consider the severed link between the licensed CMRS service provider and the emergency calling capabilities, such as location accuracy, of end-user devices and over-the-top applications.” AT&T notes that: (1) “limiting the mandate of [t]ext-to-911 services to SMS services provided by telecommunications carriers would be short-sighted, and thus a great disservice to the general public[;]” (2) a “mandate that is exclusive to the SMS platform fails to account for the fact that such services are experiencing both declining revenues and usage due to the proliferation of free [‘over-the-top’] texting applications[;]” and (3) “[t]he FCC must adopt a technologically-neutral solution that applies equally to carrier-provided SMS services and competitive alternatives to avoid distorting the marketplace to the detriment of one service provider.” AT&T further explains that “failing to include [‘over-the-top’] substitutes in the mandate may cause significant customer confusion regarding the accessibility of emergency

services via text message” and that “applying this mandate on a technology neutral basis ensures that the effectiveness of the mandate does not depend on the dominance of any platform or on the market position of any group of service providers.” Additionally, AT&T notes that “including [‘over-the-top’] providers in the scope of a text-to-911 mandate would assist ongoing industry standards work by encouraging [those] providers to participate in...developing a text-to-911 solution.”

84. On the other hand, several entities express concerns about the Commission extending text-to-911 obligations to “over-the-top” software applications. Sprint notes that “[m]any . . . over-the-top messaging providers are relatively small and likely may not have the financial resources to achieve PSAP integration.” Sprint also asserts that “it would not be able to control . . . third-party commercial offerings nor influence how wireless consumers utilize such applications.” Further, Sprint highlights the limitations associated with “over-the-top” software solutions, including the ability to “obtain location information associated with a particular call.” Similarly, U.S. Cellular states that it prefers text-to-911 to “be considered in the context of native SMS,” and that it does not favor covering over-the-top text applications. U.S. Cellular also notes that “on some devices, SMS messages up-convert to MMS, and delivery of those converted messages to PSAP[s] would need to be further explored.” Motorola Mobility maintains that “any regulatory responsibility for over-the-top text-to-911 applications, including collection of precise location information, must rest only on the application developer.”

85. The VON Coalition argues that “there is no public policy justification for extending SMS-to-911 obligations to over-the-top IP text applications” and maintains that “[t]here is no evidence that customers using over-the-top applications expect that they can use these applications to contact emergency services.” The VON Coalition contends that “[i]t seems

highly unlikely that a wireless user with both an SMS functionality and an over-the-top messaging application would in some instances choose to open an application, sign in and then send an ‘SMS’ to a PSAP rather than simply using the wireless phone’s SMS capability that (a) the customer likely uses on a near-daily basis, and (b) is readily available to the user without opening any application or providing sign-in information.” The VON Coalition highlights that “over-the-top messaging applications, which are dependent on the availability of broadband Internet access, are less reliable than a wireless carrier’s SMS text services that require no broadband availability and, moreover, very little bandwidth vis-à-vis voice or other data communications on a wireless carrier’s network.” The VON Coalition also notes that “there currently are no location solutions for over-the-top applications – neither for routing a message to the appropriate PSAP nor to provide sufficient location information associated with the caller.” The VON Coalition adds that “[b]ecause an over-the-top message is provided over another provider’s network – whether a wireless carrier, wireline carrier or a Wi-Fi hotspot – there is no real-time location information associated with the over-the-top message.” Accordingly, the VON Coalition “recommend[s] that over-the-top IP-based messaging and text services that rely on the mobile operator’s data network should be excluded from an interim [text-to-911 requirement] as they are precisely the type of communications capability for which NG911 is intended.”

86. More recently, the VON Coalition reiterates these points and further argues that the lack of user location information is an impediment to enabling routing of an emergency text to the appropriate PSAP. Moreover, they argue that implementing an interim solution directed at text-to-911 may impact the transition to NG911, or may stifle innovation and alter business models. Should the Commission pursue a 911 obligation for IP-based SMS providers, the VON Coalition

urges that any obligation be limited to “two-way” over-the-top SMS, so that a texting customer is able to receive a bounce-back message where a PSAP is unable to receive text-to-911 messages.

87. Similarly, Apple urges the Commission, in addition to considering the jurisdictional and technical issues associated with implementing a text-to-911 obligation for over-the-top text messaging application providers, to limit its proposals to those applications that (1) are installed on a device that determines the user's location using a technology that meets the enhanced 911 requirements set forth in Section 20.18(h) of the Commission’s rules; and (2) independently enables the user to send text-based messages to and receive text-based messages from any valid North American Numbering Plan telephone number via the short message service protocol.

88. Discussion. As smartphone technology and applications proliferate, wireless consumers increasingly have the ability to send and receive text messages using downloadable software applications. These applications may be provided to the consumer by the underlying wireless service provider or by third party software providers, and may use one of a variety of text delivery methods. For example, some text applications deliver text to mobile telephone numbers over the carrier’s existing mobile-switched SMS network, while other applications deliver text over IP data networks, and some applications support both delivery methods and can also deliver MMS content. Several over-the-top applications hold themselves out as competitive alternatives to CMRS-provided SMS services. In addition, some software providers have developed 911-specific software applications for smartphone users that are designed specifically to support communication by text and other media with PSAPs that install and operate the application. As the Wall Street Journal recently noted, the volume of SMS text messages per month sent by consumers has recently dropped 3 percent, with the most likely explanation of this “major shift in mobile communications” attributable to migration of these messages to over-the-top

messaging platforms. Another study suggests that over 45 percent of smartphone owners use an SMS alternative such as over-the-top messaging apps in addition to or in lieu of traditional SMS. And while other analysts predict that SMS will continue to grow globally through 2016, they further predict a large scale drop-off in SMS in favor of over-the-top applications thereafter.

89. This trend towards development and use of new third-party text applications has significant implications for the implementation of text-to-911. While SMS is currently the most widely available and heavily used texting method in the U.S., and is likely to remain so for some time, consumer access to and use of third-party text applications is likely to increase over time. As this occurs, some consumers may choose to use such applications as their primary means of communicating by text, relying less on SMS or possibly bypassing SMS entirely. In that eventuality, consumers that become familiar with software applications by using them for everyday non-emergency communications will be increasingly likely to prefer them for emergency communications. Moreover, consumers faced with the pressure of an emergency may attempt to use the most familiar application available to contact 911 even if they are not certain that it will work.

90. Given this emerging trend for technology and consumer behavior patterns, we believe it is important to consider whether certain third party-provided text applications and carrier-provided applications should be subject to text-to-911 obligations, particularly those that hold themselves out as substitutes for carrier-provided SMS services. In choosing to use a particular text application from a variety of available options, consumers may not even be aware of the identity of the party providing the application or the nature of network technology that the application uses to deliver the text. Thus, imposing text-to-911 requirements based on the identity of the provider or the delivery technology could lead to some applications supporting

text-to-911 while other applications that are functionally similar from the consumer perspective do not support text-to-911. In this respect, it may be important to consider consumer expectations both now and in the future as a matter of public safety, as well as to consider means to promote competitive neutrality to ensure that like services are treated comparably, thereby avoiding arbitrage created by artificial regulatory distinctions.

91. As discussed above, consumers now have access to a wide variety of tools that allow the sending of text messages on almost any computing and communication device. However, as the VON Coalition notes, consumers may not have the expectation to send text messages to 911 from all possible text applications, and some of these may face significant technical difficulties in delivering text messages to the correct PSAP, possibly depending on the platform the application is running on. Thus, we divide text applications into two broad categories, namely (1) interconnected text applications that use IP-based protocols to deliver text messages to a service provider, which the service provider then delivers the text messages to destinations identified by a telephone number, using either IP-based or SMS protocols, 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 seek comment on applying text-to-911 obligations on the former category, but not the latter.

92. In this respect, we seek comment on the characteristics of interconnected text applications to which text-to-911 obligation should apply, if adopted. As described above, Apple suggests a two-prong approach to determine whether an interconnected text application would fall within the Commission's proposed text-to-911 obligations. The VON Coalition similarly suggests that over-the-top applications should be "two way" in order for a text-to-911 obligation

to attach. Are either of these definitions appropriate? Are they too limited? Do these characteristics conform to consumer expectations? For example, if a text messaging application only provides for “outbound-only” messaging to a U.S. telephone number, would a consumer still expect to be able to reach 911? Are there other characteristics that we should take into account?

93. We also propose to treat providers of such non-SMS text applications similarly to CMRS providers with respect to the obligation to provide text-to-911 capability to their users within a defined timeframe. By enabling text communication with any text-capable mobile number, these “interconnected text” applications provide effectively the same functionality that SMS provides currently. Therefore, we believe the same text-to-911 obligations should apply on a technology-neutral and provider-neutral basis. We seek comment on this proposal generally and on the issues discussed below.

94. We also seek comment on whether third-party interconnected text software providers face technical issues or obstacles in the implementation of text-to-911 that could affect the extent to which a text-to-911 requirement may be implemented, or the timeframe for such implementation. Commenters agree that flexibility in implementation is important to reduce the burden of deploying text-to-911. This is likely to be particularly important for interconnected text applications, since they are often designed by smaller enterprises. Do third-party software providers face difficulties assuring that their application works reliably on all hardware platforms, operating systems, and operation system versions supported by the application? Do these applications have access, possibly after asking for user permission, to cell tower and/or geo location information via platform application programming interfaces? Can applications warn users that disabling location functionality for an application may interfere with the ability to send

text-to-911 messages? Could operating system providers facilitate the access to location information for emergency calling and texting purposes? If the text application cannot obtain location information, under what circumstances can the application deliver the text message to a gateway and have the gateway service determine the approximate location of the message sender? Can texting applications determine the cellular telephone number of handsets to help locate the mobile device?

95. To facilitate discussion, we posit three possible implementation choices and invite comment on their respective advantages and disadvantages, as well as descriptions of additional options. The descriptions are meant to be illustrative, and are not meant to limit how implementers achieve the goal of providing text-to-911 to users of their applications.

96. The first implementation option leverages the SMS application programming interface (API) offered by common smartphone operating systems. The interconnected text application would use the API to deliver any text message addressed to 911, while using the application-specific mechanism for all other, non-emergency messages. It appears that many applications already separate messages by destination, as they often only deliver messages using Internet protocols for certain countries or regions.

97. In the second option, text-to-911 messages are handled the same as any other text message and delivered to the SMS gateway provider chosen by the application vendor. The gateway provider then delivers those messages to text-capable destinations. This gateway provider handles text messages addressed to 911 and delivers them to the location-appropriate PSAP, possibly with the assistance of a third party 911 message routing service.

98. Finally, in the third option, text-to-911 messages are delivered via Internet application layer protocols to PSAPs, without being converted to SMS along the way, using NG911 protocol

mechanisms. The messages can be delivered to PSAPs either by the provider of the text messaging application or a third-party service provider.

99. Are there alternative mechanisms that might be used? Which of these methods provides advantages or disadvantages for the application developer? For the PSAP? For the consumer? Which options are more likely to transition seamlessly to NG911, or provide a foundation that can be leveraged by one or more of the parties in the NG911 delivery chain? How do these options differ in terms of implementation complexity, reliance on technologies not readily available, cost to the text messaging provider or reliability?

100. Commenters have previously expressed concerns about the lack of access by the third party provider to consumer location information associated with a text-to-911 message, impacting both the ability to deliver the text message to the appropriate PSAP and the ability to locate the consumer seeking assistance. Which of the options described above facilitate delivery of location information? Are there other technical mechanisms or commercial arrangements that would facilitate the ability of a third party text application to ascertain the location from which the text originated? Can a requirement to provide text-to-911 precede such an ability? Can privacy controls utilized by some applications to limit access to location information interfere with the ability to identify the origination of a text-to-911 message? Are there other privacy concerns that need to be considered, or is it reasonable to assume that a person sending a text to 911 implicitly waives such privacy concerns? Can third party text messaging applications bypass any privacy safeguards when 911 is the destination short code?

## 7. Timetable for Text-to-911 Implementation

101. We seek comment on whether all CMRS providers and interconnected text providers should be required to implement the capability to support text-to-911 throughout their networks

by May 15, 2014. In light of the public safety benefits of making text-to-911 available to consumers regardless of carrier or service provider, and the benefits to both PSAPs and consumers from coordinated implementation, we believe it may be desirable for all CMRS providers, including small and rural carriers, and all interconnected text providers to implement text-to-911 capability in their networks on a timetable comparable to the four largest wireless carriers. Setting a single, uniform deadline for all providers would arguably facilitate coordination among text-to-911 providers, vendors, and PSAPs, reduce the likelihood of non-uniform deployment, and provide consumers with a clear expectation of when text-to-911 will be supported regardless of which carrier or service provider they use.

102. We seek comment on this approach. Would a uniform timetable help minimize consumer confusion? Is such a uniform timeframe feasible, or are there factors that could prevent small, rural, and regional CMRS providers and third-party interconnected text providers from implementing text-to-911 in the same timeframe as the four major CMRS providers? For example, some parties have posited that the relatively small size and lack of resources for certain applications developers would limit their ability to comply with a text-to-911 requirement. Is this accurate? Are there other factors we should consider?

103. The Carrier-NENA-APCO Agreement also states that once a “valid” PSAP request is made for delivery of text messages, “service will be implemented within a reasonable amount of time of receiving such request, not to exceed six months.” Further, a request for service will be “considered 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).” Are these reasonable conditions? Is six months an appropriate timeframe? What steps does a CMRS or interconnected text provider have to take to add a PSAP to its list of text recipients and how much time are such steps likely to take? Should the same timeframe apply for both CMRS providers and interconnected text providers? Should this timeframe become shorter over time as the process for responding to PSAP requests becomes more established and routine?

#### 8. 911 Short Code

104. Background. Short codes for mobile-switched text messaging are administered by the Common Short Code Administration (CSCA) and are typically five-digit or six-digit numbers. In the Notice, the Commission sought comment on whether a national short code for text-to-911 should be designated by the Commission, a standards-setting body, or some other entity. The Commission also asked how the short code should be designated or implemented.

105. Commenters in general agree that the Commission should establish and reserve the digits ‘9-1-1’ as a national short code for text-to-911. Most notably, under the Carrier-NENA-APCO Agreement, the four largest wireless carriers committed to “implement a ‘9-1-1’ short code that can be used by customers to send text messages to 9-1-1.” APCO notes that “text-to-9-1-1 should involve the digits ‘9-1-1’ and not a different short code” and that “[a]ny short code other than 9-1-1 will eventually need to be phased out as regions are able to accept text solutions direct to the PSAPs via NG9-1-1.” NENA urges that “any short code implemented must be uniform across carriers and geographic or political boundaries.” King County states that “a national short code, ideally using the digits 9-1-1, should be designated by Congress or the [FCC], similar to the designation of 911 as the national emergency number by Congress.” AT&T argues that the Commission should “establish and reserve a standardized SMS short code” and that it

“makes sense to use some variation of the present abbreviated dialing pattern 9-1-1 for this purpose.” Intrado believes that “an appropriate text solution should use the digits 911.”

Motorola, however, cautions that there may be technical issues associated with using 911 as an SMS short code in some devices, and that “end users experiences in trying to use 911 as an SMS short code may be seriously lacking.” Nevertheless, Motorola notes that it “has released well in excess of 100 mobile devices and software combinations in the U.S. market within the past three years, none of which has been tested for support of 911 as a SMS short code.”

106. Discussion. The evolution of 911 as the national emergency telephone number has resulted in the digits “9-1-1” being widely and uniformly associated with emergency communication in the United States. American consumers are familiar with dialing 911 to place an emergency voice call, and children are routinely taught to dial 911 as the way to summon help from police, fire, and ambulance service. This widespread use and consumer recognition of 911 makes it logical and highly desirable to implement 911 as a standard three-digit short code for sending emergency text messages to PSAPs wherever and whenever feasible.

107. Moreover, the general technical feasibility of using 911 as a text short code appears to be established. In each of the text-to-911 trials that have occurred to date, subscribers of the participating CMRS providers have been able to use 911 as the short code for text messages to participating PSAPs. Moreover, under the Carrier-NENA-APCO Agreement, the four largest wireless carriers committed to “implement a ‘9-1-1’ short code that can be used by customers to send text messages to 9-1-1.”

108. Given the apparent technical feasibility of a 911 short code and the widespread consumer recognition of 911 as the standard emergency number in the U.S., we do not believe that other CMRS providers should encounter any substantial issues with using a 911 short code. We

therefore propose that whenever technically feasible, all CMRS providers should configure their networks and text-capable cell phones to support 911 as the three-digit short code for emergency text messages sent to PSAPs. We seek comment on this proposal. We also seek comment on whether there are any text-capable cell phones being sold in the United States that are incapable of using the digits 911 as a short code. If so, what are those devices and how many of them are in use? To what extent, if any, could such devices be modified or updated by a consumer or wireless retail store to support a three-digit code? In the event that certain devices cannot be so modified or updated, should we designate an alternate short code (e.g., a five-digit code) that such devices could use?

109. With respect to interconnected text applications, we recognize that “short codes” per se may not be appropriate conceptually for non-SMS texting. We therefore seek comment about whether there are any technical obstacles or other issues associated with such applications using the three-digit identifier 911. How can these issues, if any, be addressed? Are they specific to particular applications, or to IP-text messaging generally? Should interconnected text applications provide an icon indicating the ability to reach text-to-911?

#### 9. TTY Compatibility Requirement for Wireless Services and Handsets

110. The Commission first adopted a requirement for wireless carriers to be capable of transmitting TTY calls to 911 services in July 1996. Although the initial deadline set for implementation of this requirement was October 1, 1997, efforts to find a technical solution to support TTY (Baudot) technology over digital wireless systems ended up taking years of research and testing. As a result, the Commission granted multiple extensions of time for entities to comply with this mandate, ultimately requiring compliance by June 30, 2002. At that time, per the 1996 Order, wireless service providers were required to upgrade their digital networks to

be compatible with TTYs and handset manufacturers were required to provide a means by which users could select a TTY mode on their phone's menus. However, by the time these changes were implemented, new digital technologies, more mobile and less expensive, had caused most TTY users to migrate away from use of these devices as their primary communication mode.

111. It is for this reason that the CVAA included a provision for the EAAC to consider deadlines “for the possible phase out of the use of current-generation TTY technology to the extent that this technology is replaced with more effective and efficient technologies and methods to enable access to emergency services by individuals with disabilities.” ATIS points to this provision in recommending that the Commission waive the TTY compatibility requirement for new wireless handsets where such handsets support the ATIS INES Incubator recommended solution. Specifically, ATIS argues that “[w]hile PSAPs and wireless networks should support TTY services for the foreseeable future, the TTY requirement for wireless handsets may be a redundant communication modality for future wireless handsets that support the recommended ATIS INES Incubator solution.

112. As we noted earlier, the EAAC survey confirmed the declining use of TTYs by people with disabilities as well as the need for new forms of accessible communications to reach 911 services – including text and video – by persons who have hearing or speech disabilities. The decline in TTY usage is also reflected in the steep reduction in the number of minutes of TTY-based TRS over the last several years. At the same time, an estimated 100,000 users make approximately 20,000 emergency calls annually using TTY. In other words, while it is true that TTY use is declining, TTY still provides an invaluable, real-time 911 service for its users. Additionally, no similar robust products exist for mobile and IP-networks, where the expected lifetime of a product is about two years as opposed to TTY's ten year expected lifetime. Finally,

users of TTY may not wish to switch to a new communication mechanism with which they are not familiar.

113. Therefore, we seek further comment on whether the Commission should sunset the TTY requirement for new handsets, and if so, what criteria should be adopted before such action is taken. If the Commission does sunset the TTY requirement for new wireless handsets, should it do so only contingent upon a wireless texting capability? The EAAC recommended that the Commission lift the TTY requirement only for those handsets that have “at a minimum real time text or, in an LTE environment, IMS Multimedia Telephony that includes real-time text.” In addition, the EAAC’s 2012 Subcommittee on TTY Transition concluded that “[c]onsistent implementation of a well-defined ‘TTY replacement’ with higher functionality real-time text, simultaneous voice and better mobility can fill an important need in accessible communication for user to user calls, relayed calls and 9-1-1 calls.” We seek comment on these EAAC recommendations concerning the removal of the TTY requirement. Should the ubiquitous use of SMS, alone or with other forms of text capability, be a factor in determining whether to lift the TTY requirement? Or, does the real-time nature of TTY communication make it fundamentally different from SMS, such that SMS is not a valid replacement for TTY-capable handsets?

#### 10. Routing and Location Accuracy

114. In the Notice, the Commission sought comment on how to ensure that text messages to 911 include accurate location information for routing to the appropriate PSAP and for determination of the sender’s location by the PSAP. The record developed in response to the Notice indicates that it is technically feasible to route text messages originated on CMRS mobile switched networks to the appropriate PSAP based on the cell sector from which the text originated. Therefore, we propose to require CMRS providers (and their associated text-to-911

vendors) to use cell sector location to route 911 text messages originated on their networks to the appropriate PSAP. We also seek comment on any technical or informational challenges for third party interconnected text providers with respect to determining caller location and providing the appropriate routing. We do not propose at this time to require provision of E911 Phase II location information in conjunction with 911 text messages, although we encourage its provision where technically feasible. We discuss these proposals in greater detail below.

a. Routing of Text Messages to the Appropriate PSAP

115. Background. While the Carrier-NENA-APCO Agreement does not speak specifically to routing issues, the signatory providers agreed to provide text-to-911 on an interim “best-efforts” service subject to a valid PSAP request. However, the provision of text-to-911 under the Carrier-NENA-APCO Agreement is 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 SMS message.” Many commenters, including public safety entities, argue that any text-to-911 solution must be capable of routing text messages to the appropriate PSAP based on the sender’s location. APCO states that “any solution must provide PSAP call routing capability that is as good as or better than what is being deployed today.” BRETSA and the Colorado 9-1-1 Task Force agree that “[t]he location of the caller must be available for the purposes of routing the call to the correct PSAP.”

116. Focusing on SMS-to-911, some CMRS commenters contend that there are technical difficulties in routing SMS messages to the correct PSAP. The Blooston Rural Carriers claim that “current SMS standards do not support automated routing to the PSAP or automated location information.” Sprint Nextel states that “location information is not included with SMS text messages and would not be available for PSAP routing.” 4G Americas argues that

“SMS...provides no location information – not even a cell tower – so the originating network may not accurately route the message to the correct PSAP. Because the lack of location and session information, false messages can be easily spoofed...without the PSAP detecting the spoof.”

117. However, commenting vendors counter that even if SMS was not initially designed to support automatic routing to PSAPs, it is technologically feasible to add the capability to route SMS text messages to a specific PSAP based on the sender’s location. According to Intrado, SMS messages can be routed to the appropriate PSAP by adding a Text Positioning Center (TPC) to the existing wireless network. Intrado states that the TPC will “function like a [Mobile Position Center] associated with wireless voice calls” and that “[u]pon a mobile device’s initial text-to-911, the TPC will determine the appropriate PSAP to which to route the text request for assistance.” Intrado also notes that the “routing determination will be based upon the location of the cell sector to which the mobile device is connected.” TCS similarly states that SMS messages can be routed to the appropriate PSAP “[b]y combining existing location technologies with existing SMS protocol capabilities.” The VON Coalition also notes routing challenges for third-party over-the-top application providers, which may not have direct access to caller location.

118. Discussion. Verizon and TCS have indicated that they will use coarse location as the basis for PSAP routing determination in their deployment of text-to-911. Moreover, according to the Tennessee Emergency Communications Board (TECB), “[t]he TECB would not have agreed to host the pilot [with AT&T] had it not included the capability for location information to travel with the text. The Tennessee pilot will include a texting solution that includes rough location information.” The coarse or rough location information as referred to by Verizon and

TECB is the equivalent to the location of the cell sector from which the wireless 911 call is made – or generally E911 Phase I information under the Commission’s E911 rules. Given the apparent technical feasibility of cell sector location and its actual use in text-to-911 trials to date, we propose that CMRS providers be required to route text messages automatically to the appropriate PSAP based on the cell sector to which the mobile device is connected. We also propose to define the “appropriate” PSAP presumptively for text-to-911 routing purposes to be the same PSAP that would receive 911 voice calls from the same cell sector. However, we recognize that in some instances, state or local 911 authorities may wish to have text messages routed to a different PSAP from the one that receives 911 voice calls from the same location (e.g., to have all 911 texts within a state or region routed to a single central PSAP rather than to individual local PSAPs). Therefore, we propose to allow designation of an alternative PSAP for routing purposes based on notification by the responsible state or local 911 authority. We seek comment on these proposals. We also seek comment on whether there are any technical obstacles or cost factors that could make it more difficult for some CMRS providers, such as small or rural carriers, to support automated routing of text messages to the appropriate PSAP.

119. We also seek comment on specific technical or informational challenges that third-party over-the-top messaging applications providers may face with respect to assessing caller location and the associated PSAP. Apple, for example, suggests that text-to-911 obligations should only attach for third-party text messaging applications where the applications is installed on a phone that meets the Commission’s location accuracy requirements. Will this be sufficient to enable such applications to accurately route a 911 call to the appropriate PSAP? Are there other agreements or protocols that would be necessary between the third-party application provider and the underlying carrier to ensure appropriate routing? What would these entail?

120. Several commenters noted that spoofing could compromise the accuracy of location-based routing of SMS text messages to PSAPs. We note, however, that the proposed systems use systems not under the control of the caller to query for cell tower location. SMS messaging uses the same mechanism as calls to provide the originating number to the network, and thus, there is no unique attribute of text messaging that leaves it open to spoofing. We also note that the potential for spoofing already exists for VoIP calls to 911. As Vermont indicates with regard to its text-to-911 trial, “there is nothing about this new technology that is any more likely to result in ‘spoof’ contacts than what we already deal with on the voice side of the system.” Accordingly, we seek comment on whether the potential for spoofing text messages is any greater than the potential for spoofing VoIP calls. Are there any actions that the Commission could take to minimize the risk of text-based spoofing?

b. 911 Location Accuracy Requirements

121. Background. In the Notice, the Commission noted that some parties had expressed concerns about the inability of SMS to provide the sender’s precise location. The Commission sought comment on ways to overcome this limitation. Specifically, the Notice asked whether it is technologically feasible for the recipient of an emergency SMS text message to query for the texting party’s location using the phone number provided. The Carrier-NENA-APCO Agreement does not specifically address location accuracy issues. However, the Carrier-NENA-APCO Agreement does limit the provision of text-to-911 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 SMS message.”

122. Commenters indicate that, while it is feasible to use cell sector location to route emergency texts to the appropriate PSAP, it may be more difficult for CMRS providers to

provide more precise location information in connection with text messages. Neustar notes that “some wireless operators use network based location determination mechanisms that depend on the handset being in a voice call to receive enough measurement data to determine the location of the caller accurately. Such networks could not be expected to respond with high resolution location information for texters. This will be true for any SMS to 911 solution.” On the other hand, TCS indicates that its system would use “the same location technologies and strategies used today for 9-1-1 voice calls to both route the text message to the appropriate PSAP, and for delivering a more precise location of the sender to PSAP personnel.” TCS notes, however, that “the carrier’s 9-1-1 location platform may not be able to provide location outside of a 9-1-1 voice call” and that “coarse [location] may be the only available location for initial service launch.” The VON Coalition expresses similar concerns with respect to providers of “over-the-top” text messaging applications in terms of their inability to access user location information.

123. Discussion. The record in this proceeding indicates that providing precise location information in connection with text messages is technically feasible but could involve significant changes and upgrades to existing SMS-based text networks. We are therefore concerned that it could initially be overly burdensome to require CMRS providers to comply with the Commission’s Phase II E911 location accuracy rules when transmitting text messages to 911. While we recognize the importance of providing precise location information to PSAPs, we believe that the benefits of enabling consumers, particularly consumers with hearing and speech disabilities, to send SMS-based or non-SMS-based text messages to 911 outweigh the disadvantages of being unable to provide precise location information. Accordingly, we propose that the Commission’s Phase II E911 location accuracy requirements not apply to the initial implementation of text-to-911. Nevertheless, we encourage the voluntary development of

automatic location solutions for text-to-911 that provide at least the same capability as Phase II location information for voice calls to 911, even if the location solution does not use the same underlying location infrastructure. For example, messaging applications could transmit location information that is available on handsets using the data channel. Further, applications that use IP-based message delivery may also be able to include location information obtained via a mobile device API along with the text message. We also seek comment on whether operating system vendors or CMRS providers can facilitate the delivery of more precise location for interconnected text providers. Are there any other factors that the Commission should consider in regard to location delivery for interconnected text providers?

c. Roaming

124. Background. Roaming enables wireless consumers to use mobile devices outside the geographical coverage area provided by their home network operator. In the Notice, the Commission asked whether it is technically feasible to determine the originating location of an emergency text message in all situations or whether it is feasible only in situations where the customer is not roaming. As noted above, the Carrier-NENA-APCO Agreement does not provide text-to-911 capability to wireless subscribers roaming outside of a subscriber's home wireless network. Because sending and receiving texts while roaming involves two networks, the consumer's home network and the visited roaming network, roaming may create issues for text-to-911 because of the greater technical complexity of routing the message to the correct PSAP based on the consumer's location. In the non-emergency context, when a wireless consumer sends an SMS message while roaming on a visited network, the visited network passes the text message via designated signaling links to the user's home network, which in turn sends the text message to its final destination.

125. Several commenters address text-to-911 in the context of roaming customers. In considering vendor proposals for text-to-911 solutions, NENA contends that applicable location requirements must be met regardless of whether a consumer initiates or continues a text-to-911 string through the consumer's home network or a roaming partner. Similarly, APCO argues that when a device roams to a visited network, 911 text messages must be capable of remaining connected with not only the PSAP, but also the specific call taker. T-Mobile voices a number of concerns about roaming, stating that "SMS-to-911 does not work when roaming." T-Mobile further notes that "SMS for a T-Mobile customer roaming on another carrier's network remains supported by T-Mobile's network and messaging infrastructure, rather than by the carrier providing roaming. However, T-Mobile will not have location information when its subscriber is roaming, and thus can neither determine whether a roaming subscriber is in an area that supports text-to-911 nor route the 911 text to the appropriate PSAP." U.S. Cellular stresses "the need for the FNPRM to include a discussion regarding the need for requirements to address customers sending texts to 911 while roaming outside of their carrier's network and for the resulting need to address interoperability across carrier networks." Finally, Sprint Nextel urges the Commission to refer technical considerations like roaming to technical working groups and standards-setting bodies for further discussion.

126. Discussion. We agree with NENA and APCO that it is critical for consumers who are roaming to have the ability to text-to-911 during an emergency, and we further note that current voluntary measures do not provide for text-to-911 service while a subscriber is roaming. Accordingly, we seek comment on whether both the home and visited network operators must cooperate to support the delivery of the text to the appropriate PSAP serving the sender's location when a consumer sends a text message to 911 while roaming. We also seek comment

on T-Mobile's assertion that its network is unable to collect location information on a roaming subscriber and is thus, technically limited from providing text-to-911 for roaming subscribers. Could the visited network intercept text-to-911 messages and determine the mobile device location? What technical and economic obstacles need to be addressed in order to provide text-to-911 service to consumers? How can these obstacles be overcome? We also seek comment on whether the same approach should apply to international roamers while they are located in the United States.

#### 11. PSAP Options for Receiving Text-to-911

127. There appears to be general agreement that the NG911 architecture offers an IP standards-based interface protocol that supports the delivery of text messages, regardless of the technology used by the mobile device. While some PSAPs are currently NG911-capable, or soon will be, many other PSAPs will not be NG911-capable for an extended period of time, limiting their options for handling text messages in the interim. Thus, in order to implement text-to-911, particularly on a nationwide basis, the Commission must take the disparate capabilities of PSAPs into account. Accordingly, we propose a set of near-term options that would enable all PSAPs to accept text messages transmitted by CMRS or interconnected text providers, regardless of whether the PSAPs are NG911-capable. This proposed approach provides non-NG911-capable PSAPs with the flexibility to handle text messages in the near term without requiring PSAPs to fund significant upfront investments or upgrades. We seek comment on each option and the proposal as a whole.

##### a. NG911-Capable PSAPs

128. We propose that text-to-911 service providers deliver text messages to NG911-capable PSAPs using a standardized NG911 protocol, such as the NENA i3 protocol. This will ensure a

consistent format for delivery of text messages to all NG911-capable PSAPs. We seek comment on this proposal. Should the current NENA i3 protocol be the single protocol used for delivery of all text messages to NG911-capable PSAPs? How should we account for future releases of NENA i3 that may support additional protocol interfaces?

b. Non-NG911-Capable PSAPs

129. For non-NG911-capable PSAPs, several technical options are available that could be used for receipt of text messages. For its part, the Carrier-NENA-APCO Agreement allows PSAPs to “select the format for how messages are to be delivered.” We propose that non-NG911-capable PSAPs be allowed to choose among several options, and to designate a preferred option and one or more fallback options.

(i) Web Browser

130. Under this option, a PSAP would receive text messages via a web browser installed in the PSAP (typically at one or more terminals used by PSAP call-takers) and connected to a third-party service provider. Verizon Wireless and TCS have stated that with respect to Verizon’s roll-out of text-to-911, they will offer PSAPs the ability to receive text messages using the web browser approach. TCS states that it has “demonstrated a D-IP SMS client application that runs in a web browser and gives a PSAP call-taker who has connectivity to the IP-messaging network the ability to receive, view, and respond to the SMS 9-1-1 call.” This approach will require the PSAP to have Internet connectivity, but not full NG911 capability.

131. We seek comment on the web browser approach. Because many PSAPs already have Internet connectivity even if they are not NG911-capable, we believe that this approach would offer PSAPs a cost-effective alternative for receiving text messages without having to upgrade to NG911. We seek comment on what costs, other than Internet access, a PSAP would have to

incur when implementing a web browser solution. For example, T-Mobile contends that TCS' web browser application would require PSAPs to upgrade their CPE. Is this accurate, and if so, what would the nature and cost of the required upgrade?

132. We also seek comment on how the web browser option should be implemented in a multi-party environment where multiple web browser options and applications may be available to both PSAPs and text-to-911 service providers. For example, it is possible that individual text-to-911 service providers could offer different web browser applications to the same PSAP, requiring the PSAP to either support all of the offered applications or to request that the providers use a common application. Alternatively, neighboring PSAPs could select different web browser applications from one another, requiring a text-to-911 service provider serving both PSAPs to support multiple applications or to request that the PSAPs choose a common application.

133. As a practical matter, we expect that many of these issues can be resolved through development by vendors of standards-based interoperable web applications that enable CMRS providers, interconnected text providers, and PSAPs to choose single-source solutions rather than having to support multiple solutions. Nevertheless, we seek comment on how such issues should be resolved where CMRS providers, interconnected text providers, and PSAPs cannot agree on a common web browser solution. Specifically, if the PSAP chooses to receive text messages via web-based delivery, under what circumstances should CMRS or interconnected text providers be obligated to accommodate the PSAP's choice of web browser application? If the PSAP uses a service provider ("text service provider") to render text messages to a web browser, as appears likely based on the service trials, a problem would arise only if two CMRS or third-party text providers use different service providers on their end to route text-to-911 messages. In that

scenario, we proposed to allow the PSAP to designate its text service provider as the recipient of text messages under two conditions. First, the PSAP text service provider must accept text messages using industry-standard protocols, such as the NENA i3 standard. Second, the PSAP text service provider must not charge the CMRS or interconnected text provider a fee for delivering such messages. We seek comment on this proposal.

(ii) Text-to-Voice Gateway Centers

134. Under this option, a PSAP would receive text messages via a gateway center where emergency-trained telecommunicators would translate between text and voice. The gateway center would operate in a manner similar to a telematics call center of the kind that telematics providers such as OnStar use to handle emergency calls from their subscribers and transmit such calls to 911. Telematics providers use cell-site location to determine the caller's location, match the location to the associated PSAP, and then use VoIP-based routing to connect with the PSAP over its 911 trunks. Intrado has proposed a similar solution for delivery of text messages through a gateway.

135. Some commenters express concerns about implementing a gateway approach. T-Mobile notes that "a national SMS relay center does not exist today, and would have to be created and funded, which also cannot be accomplished rapidly." Sprint submits that Intrado's proposal "would require the installation of extensive infrastructure to adapt wireless networks to the solution. Whether this proposal could ultimately be successful nationwide as an interim text-to-911 solution cannot be gauged, since testing has been very limited to date."

136. We seek comment on the feasibility of establishing one or more gateway centers for translation and transmission of text messages to PSAPs. What are the potential costs of implementing this approach, and how would such costs be allocated? Are CMRS providers or

vendors offering text-to-911 services likely to develop and offer a gateway option to non-NG911-capable PSAPs? Are non-NG911-capable PSAPs likely to choose this option over the web browser or TTY-based delivery options if it is available?

137. We also seek comment on how best to ensure that text-to-voice translation offered as part of the gateway option does not lead to harmful delays in communication between the sender and the PSAP. We anticipate that with proper certification and training, telecommunicators will be able to handle these responsibilities efficiently and professionally with a minimum of delay. We also anticipate that as an increasing number of PSAPs become capable of accepting IP-based text, the number of 911 text messages that will require text-to-voice translation will decrease, though text-to-voice or text-to-TTY (see below) may continue to be necessary until all PSAPs have been upgraded.

(iii) Text-to-TTY Translation

138. Under this option, text messages would be converted into TTY calls that the PSAP would receive over its existing TTY facilities. Since all PSAPs already have TTY capability, this is potentially a very low-cost solution that can be deployed relatively quickly. Moreover, this solution supports direct communication between the sender and the PSAP.

139. A number of commenters express support for this option. Neustar contends that using TTY to transmit SMS-originated text messages is a viable interim solution that could “bridge the gap” before and during the transition to NG911. Neustar notes that “almost all mobile phones are SMS capable but cannot do TTY and almost all PSAPs [are] TTY capable but cannot handle SMS.” Neustar further asserts that this option could be implemented at minimal cost because “carriers would only need to make small investments in providing cell ID query mechanisms where they are not already deployed for itinerate use, and PSAPs should be able to handle text-

to-911 using their existing TTY equipment.” Verizon Wireless and TCS have stated that they intend to permit PSAPs that lack Internet connectivity to receive text messages using this approach.

140. On the other hand, some commenters state that TTY is an outdated technology that could be susceptible to errors in an automated text-to-TTY translation process. T-Mobile states that TTYs “are not sized for general public use” and “present their own technical problems.” T-Mobile also contends that investment in TTYs would be a dead end investment, that TTYs are asynchronous and use Baudot tones, and that the half-duplex nature of TTYs can lead to messages being garbled if the texting party and PSAP call taker send messages over the top of one another. INdigital submits that “using the TTY protocol with a 1% total character error rate...imposes a technical requirement that is nearly impossible to meet.” T-Mobile asserts that “many PSAPs have a limited number of TTY-equipped answering stations [and that] the capital investment required to handle the much larger volume of messages that would result from a general public SMS-to-911 system could be substantial for cash-strapped PSAPs.” APCO adds that PSAPs “us[ing] standalone TTY devices...will face additional challenges if the volume of calls to these legacy devices increase[s] dramatically.”

141. We seek comment on the feasibility and potential costs and benefits of making the text-to-TTY approach available as a text delivery option for CMRS providers, interconnected text providers, and PSAPs. Given the age and technical limitations of the PSAPs’ existing TTY equipment, are PSAPs capable of handling a volume of text messages transmitted over TTY from the general public that could be much larger than the low current volume of TTY 911 traffic? Could the technical problems associated with TTYs result in translation errors? Are there measures that could be taken to improve the capacity and reliability of TTY equipment to

handle text-to-911? Are larger PSAPs likely to make use of TTYs to receive text-to-911 messages, compared to the other options discussed earlier? Do most PSAPs have stand-alone TTY devices or are these more likely to be built into the call taker equipment and would thus be able to handle a larger text volume?

(iv) State/Regional Approach

142. Under this option, a state or regional 911 authority could designate a NG911-capable PSAP to receive and aggregate 911 text messages over a large region served by multiple non-NG911-capable PSAPs, such as a county, a multi-county region, or an entire state. The NG911-capable PSAP would exchange text messages with the caller and then communicate by voice with the non-text-capable PSAP that serves the caller's location. This approach is being applied in the Black Hawk County, Iowa text-to-911 trial, where the Black Hawk County PSAP accepts text messages from any i-Wireless user located in the state, thus acting as a gateway for other PSAPs in the state.

143. We seek comment on this approach. In general, allowing 911 authorities to aggregate handling of text messages through a single PSAP on a statewide or regional basis could accelerate the availability of text-to-911 and lead to cost savings in its implementation. This approach would also minimize the operational and technological impact of text-to-911 for non-text-capable PSAPs. However, relaying text messages from the designated PSAP to other PSAPs in the state or region could lead to delay in responding to emergency text as compared to emergency voice calls. We seek comment on what measures, if any, could reduce the risk of such delay.

c. Notification of PSAP Acceptance and Delivery Method

144. In order for CMRS and interconnected text providers to deliver and PSAPs to receive emergency texts under the framework proposed in this Further Notice, a mechanism will be needed for each PSAP to notify providers (or their text-to-911 vendors) that it is prepared to accept text messages and indicating the delivery option it has chosen. In the Notice, the Commission sought comment on the possibility of developing a centralized routing database or databases that would identify which PSAPs are accepting text-to-911 messages and the routing and delivery method selected by each PSAP. The Carrier-NENA-APCO Agreement does not specify a specific notification procedure; however, it defines a “valid request” for text-to-911 service as one in which “the requesting PSAP represents 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 signatory service provider to provide, text-to-911 service (and such authorization is not subject to dispute).”

145. In its comments, Bandwidth.com proposes a gateway architecture that includes a database of all PSAPs with their preferences for handling text messages. 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. It would also enable providers of text-to-911 routing services to coordinate their databases for the routing of text messages. We seek comment on the feasibility and cost of implementing a gateway architecture or database mechanism. If such coordination is desirable, how can it be encouraged or facilitated? What entity should operate the database? How should PSAPs declare their preferences? Can the registry of preferences be implemented as an extension of the Commission’s PSAP database?

Should there be a default preference to ensure that PSAPs that do not declare their text delivery option by a certain date are then assumed to prefer text-to-TTY delivery, since that option should be available without further PSAP action? What constitutes a valid notification? The Carrier-NENA-APCO Agreement requires an appropriate local or State 911 service governing authority to specifically authorize a PSAP to accept text-to-911. Should this be a requirement for a valid notification?

146. We seek comment on the feasibility and cost of implementing Bandwidth.com's proposal or a similar gateway architecture or database mechanism. 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 CMRS provider or systems service provider individually. It would also enable providers of text-to-911 routing services to coordinate their databases for routing text messages, via the ECRF. If such coordination is desirable, how can it be encouraged or facilitated? How should PSAPs declare their preferences? Should there be a default preference to ensure that PSAPs that do not declare their text delivery option by a certain date are assumed to prefer text-to-TTY delivery, since that option should be available without further PSAP action? Who should operate such a database? Can this registry of preferences be implemented as an extension of the Commission PSAP database?

## 12. Cost Recovery and Funding

147. While we seek to structure our proposals to keep text-to-911 costs as low as possible for both text-to-911 service providers and PSAPs, we seek comment on whether there are additional actions that the Commission could take to enable text-to-911 service providers and PSAPs to recover their costs. We note that under the Carrier-NENA-APCO Agreement, signatory

providers agreed to provide text-to-911 “independent of their ability to recover these associated costs from state or local governments.” At the same time, the Carrier-NENA-APCO Agreement requires that “incremental costs for delivery of text messages (e.g. additional trunk groups to the PSAP’s premises required to support TTY delivery) will be the responsibility of the PSAP, as determined by individual analysis.”

a. Text Messaging Providers

148. Background. In response to the Notice, a number of CMRS commenters express concerns over funding text-to-911. CTIA states that “[a]ppropriate funding is a significant uncertainty given the considerable resources that would be needed to deploy text-to-911 capabilities on a nationwide basis.” RCA notes that “[c]oncern for adequate funding of future 911 systems is widespread and the increasing burden on wireless and IP-based providers to maintain the 911 system moving forward is troubling.”

149. Vendors contend that existing 911 cost allocation mechanisms can be used to recover the cost to implement near-term text-to-911 for both CMRS providers and PSAPs. Intrado asserts that the cost of every “functional element” of a text-to-911 solution “can be allocated to wireless carrier networks and PSAPs consistent with how they are assigned today under the Commission’s King County demarcation ruling.” Intrado submits that, depending on which “functional elements” PSAPs choose to implement at each stage of text-to-911, “the cost allocations can be changed if funding considerations dictate.”

150. Some commenters suggest that existing funding mechanisms, such as TRS and the Universal Service Fund (USF) could be applied to recover costs of text-to-911 implementation. Intrado contends that “the FCC can and should determine that SMS is eligible for TRS funding to the same extent that IP-Relay is eligible for TRS funding.” Bandwidth.com submits that “a

default destination for text messages that do not have location info must be determined” and contends that “[t]he TRS/VRS and IP Relay service providers provide an excellent option for this function given their existing role in facilitating communications between deaf or hard-of-hearing callers and PSAP personnel.” NASNA also urges the Commission to consider “[u]se of the Universal Service Fund to assist States and regions with the costs of NG9-1-1.”

151. Discussion. We believe that existing cost recovery mechanisms are sufficient to support implementation of text-to-911 under the framework presented in this Further Notice. Generally, CMRS providers recover their 911 implementation costs from their subscriber base. Since CMRS providers already support SMS and other texting applications in their networks, and have the ability to recover costs of those applications from their customers, it appears that the primary additional cost for CMRS providers to implement text-to-911 will be to establish and support the specific routing and relay functions needed to transmit emergency text messages to PSAPs. Additionally, under the Carrier-NENA-APCO Agreement, the major carriers have agreed to provide this service independent of cost recovery from state or local governments. The record indicates that the incremental cost would be in the range of \$4 million annually.

152. We also note that an additional source of funding to reimburse wireless carriers for their 911 service implementation costs can be found in certain cost recovery programs that have been established through state legislation. Most states have reported to the Commission that “they used the fees or surcharges that they collected for 911/E911 service solely to fund the provision of 911/E911 service.” Dependent on the regulatory mechanism set forth in each statute, states distribute funding either to the carriers directly, or to a designated state or local entity which then reimburses carriers. For example, Alabama provides that “20% of the service charges collected are retained by the [States’ Wireless 9-1-1] board . . . to reimburse wireless service providers for

Phase I and II expenses.” In comparison, Nebraska provides that from its 911 fund “payments are also made directly to wireless carriers for costs incurred for the provision of enhanced wireless 911 services.” Though the means and extent to which carriers receive state-prescribed reimbursement for 911 implementation costs vary from state to state, we find that such cost recovery programs are an available and significant source of funding that can facilitate the roll-out of text-to-911 capability. Moreover, some states have started to apply their 911 funding to initiate deployment of full NG911 capabilities.

153. Additionally, many states allow qualifications for cost to include NG911-capable components for which CMRS providers might recover their outlays. For example, Verizon and Verizon Wireless note that “[m]any state and local governments have . . . begun reconfiguring their funding mechanisms to facilitate NG911 deployment. We find that such actions could provide CMRS providers with additional funding flexibility to develop routing and gateway functions. We seek comment on this view and request that commenters update the Commission on any such efforts that are underway.

154. We also seek comment on whether USF funding could play a role in cost recovery, particularly for low-cost text to-911 options such as the TTY-based approach. Could using these funding mechanisms expedite text-to-911 implementation? What modifications, if any, would the Commission have to make to these funding programs to achieve those objectives? In commenting on these approaches, commenters should consider the Commission’s recent amendment of its universal service rules to specify that the functionalities of eligible voice telephony services include, among other things, access to 911 and E911 emergency services to the extent the local government in an eligible carrier’s service area has implemented 911 or E911

systems. The Commission noted that Eligible Telecommunications Carriers (ETCs) “will be required to comply with NG911 rules upon implementation by state and local governments.”

155. Finally, we seek comment on current or potential approaches that would enable third party interconnected text providers to receive cost recovery for obligations they may have to provide services and offerings to implement text-to-911 capabilities. In view of the funding mechanisms in several states for CMRS providers to receive cost recovery, we seek comment on whether such state level mechanisms might currently apply to enable interconnected text providers to receive cost recovery in complying with text-to-911 obligations proposed in this Further Notice. We also seek comment on whether states or other jurisdictions provide or plan to provide cost recovery mechanisms that could apply to interconnected text providers. We note that under our proposed framework, the infrastructure used by interconnected text providers would be similar to the infrastructure used by CMRS providers for the delivery of text messages to a PSAP. We seek comment on whether this would facilitate extending existing cost recovery mechanisms on CMRS providers to interconnected text providers.

b. PSAPs

156. Background. A number of public safety commenters express concerns about funding, noting that many PSAPs are subject to state and local regulatory mandates that may affect their ability to fund the implementation of text-to-911 service. APCO asserts that “[m]any PSAPs are mandated to answer 90% of their incoming 9-1-1 calls in 10 seconds or less to qualify for receipt of wireless surcharge and other 9-1-1 funds.” APCO further contends that “[i]t is unlikely that these . . . mandates will be modified to accommodate the additional time that interim solution based text calls may have on the PSAP’s ability to meet these standards.” APCO argues that, consequently, “implementing SMS text-to-9-1-1 may jeopardize some PSAPs eligibility for

surcharge funds.” NATOA concurs, stating that “localities could lose vital 911 fees and other funding in the event they fail to meet performance mandates due to the increased time necessary to handle text-based calls.” Other commenters, however, assert that recent trials have not substantiated the alleged increase in call-taking time due to the characteristics of SMS text.

157. Wireless carrier commenters also question whether PSAPs have the necessary funding to support the transition to text-to-911. The Blooston Rural Carriers argue that “at this point in time and for the foreseeable future, PSAPs are simply not equipped (and will not be equipped) to process SMS text-to-911 transmissions, and the costs associated with the PSAP upgrades needed to achieve this capability are apt to be great.” Verizon and Verizon Wireless assert that “many PSAPs will need to secure funding sources, all will need time to upgrade their own networks and facilities and train personnel, and all will need to educate consumers on where NG911 is available . . . .” Verizon and Verizon Wireless further submit that “the Commission should avoid mandates for short-term solutions that would force NG911 to compete with SMS-based solutions for PSAP and service provider resources.” 4G Americas cites the “[s]carce funding for PSAP NG911 upgrades [a]s a major concern” and argues that “[it] would do little good to mandate carrier near-term deployment of technologies that would require massive investments by PSAPs or require a complete overhaul of existing emergency communications systems.”

158. In view of perceived funding difficulties, both public safety commenters and CMRS providers advocate a regional or state-level approach to lower costs and generate economies of scale in implementing near-term text-to-911 as well as facilitating a transition to NG911. CTIA contends that “[a] statewide approach to NG911 deployment will encourage wireless service providers and PSAPs to coordinate their efforts to deploy requested services in a reasonable and efficient manner and mitigate public confusion regarding the capabilities available to a local

PSAP.” Verizon and Verizon Wireless submit that “[a] statewide approach provides a bright-line mechanism that is consistent with funding mechanisms, which are generally governed at the state level . . . .” Verizon and Verizon Wireless refer to a “current trend in state governments toward greater PSAP consolidation and statewide coordination of NG911 efforts.” King County notes that “it may not be feasible to fund the upgrades necessary for NG911 at the state’s 64 PSAPs” and that “[t]he State E911 Office and the NG911 Subcommittee have developed a plan for the centralization of equipment at various hubs throughout the state that will serve multiple PSAPs in order to reduce equipment upgrade costs.” Verizon and Verizon Wireless remark that “[i]t is not necessary that every jurisdiction within a state be NG911 capable prior to a service provider’s initiation of service within the state.” RCA adds that “the current economic climate and need for financial restraint make consolidation of PSAPs an essential part of the transition to NG911” and that “[c]onsolidation is one of the most important preliminary steps on the path to widespread NG911 deployment.”

159. Further, NENA contends that “[i]t will prove most efficient if requests for text service originate from these larger units, reducing costs for both the public and the providers called upon to provide service.” NENA cautions, however, “that 9-1-1 remains . . . [a local service] that, in many states, is provided by small local agencies below the county level with little or no higher level coordination or oversight.” “[T]o maintain the autonomy to which 9-1-1 system operators have become accustomed,” NENA suggests that the Commission “refrain from mandating a regional or state-wide approach to system readiness showings, and instead make such aggregated showings optional, at the election of the states.”

160. Discussion. PSAPs generally pay for their 911 costs from state and local revenues generated by monthly 911 fees that CMRS providers collect from their subscribers. Wireless

carriers argue that cost recovery regulations in many jurisdictions are inadequate to meet PSAP funding needs for text-to-911. Verizon and Verizon Wireless note that “[s]ome jurisdictions impose significant restrictions on use of 911-related fees or taxes by limiting the use of such monies for traditional local exchange and commercial mobile radio services, or imposing explicit restrictions on the types of equipment and services that may be purchased.” Verizon and Verizon Wireless add that “[s]tate and local jurisdictions that face funding constraints may, if given a choice between a costly SMS-based solution versus a more robust IP-enabled NG911 technology, opt for the former.” Although “a particular jurisdiction [could] fund both direct SMS and NG911 solutions, such an outcome could result in even higher fees imposed on consumers with marginal additional public safety benefit.”

161. As discussed above, we propose several options that consider the disparities in PSAPs’ current technical capabilities and that enable non-NG911-capable PSAPs to handle texts without significant cost or upgrades. For instance, both the web delivery and the TTY-translation options is a low cost alternative because PSAPs already have TTY capability. While this option employs an IP-gateway to facilitate routing functions compared to the traditional relay function of TTY/TDD, we believe that, in view of the relatively low cost to PSAPs to implement TTY-translation-based text-to-911, existing funding mechanisms can serve to defray the costs. Similarly, PSAPs that choose the gateway center option can limit costs by using already-trained CAs to translate between text and voice.

162. Moreover, contrary to Verizon and Verizon Wireless’ assertion that funding for interim text-to-911 solutions would adversely affect the resources available to support a transition to full NG911 capabilities, we believe that the low cost options discussed above constitute a reasonable and cost efficient alternative to resolving possible limitations in funding at the state or local

level. Additionally, we note that under the current Carrier-NENA-APCO Agreement, PSAPs would be responsible for their incremental costs for delivery of text messages. We seek comment on this view.

163. Based on our proposal to offer PSAPs an array of text-to-911 delivery options, including options that entail very limited cost, we believe that existing funding mechanisms constitute a sufficient resource to implement text-to-911 within our proposed time frame. We seek comment on this approach. We also seek comment on whether these funding mechanisms could be applied to other IP-based component upgrades. If not, what modifications need to occur? Are there actions the Commission could take to encourage or facilitate those modifications at the state or regional level? We invite comment on approaches that the Commission could pursue to encourage the states or regional entities to address such changes in funding to incentivize deploying the necessary text-to-911 upgrades within the proposed timeframe.

### 13. Liability Protection

164. Background. In general, liability protection for provision of 911 service is governed by state law and has traditionally been applied only to LECs. However, Congress has 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, and more recently, to providers of NG911 service. In 2008, Congress enacted the New and Emerging Technologies 911 Improvement Act (Net 911 Act), which provides that a “wireless carrier, IP-enabled voice service provider, or other emergency communications provider ... shall have” the same liability protection as a local exchange carrier under federal and state law. In February 2012, Congress further extended state liability protection to providers of NG911 service in the Next Generation 9-1-1 Advancement Act of 2012. The Next Generation 911 Advancement Act provides that “a

provider or user of Next Generation 9-1-1 services...shall have immunity and protection from liability under Federal and State law [to the extent provided under section 4 of the Wireless Communications and Public Safety Act of 1999],” with respect to “the release of subscriber information related to emergency calls or emergency services,” “the use or provision of 9-1-1 services, E9-1-1 services, or Next Generation 9-1-1 services,” and “other matters related to 9-1-1 services, E9-1-1 services, or Next Generation 9-1-1 services.”

165. In the Notice, which was released prior to the Next Generation 911 Advancement Act, the Commission asked whether the liability provisions in the NET 911 Act embrace the full range of technologies and service providers that will be involved in the provisioning of NG911 services. The Notice also asked whether the Commission has the authority to extend liability protection to entities involved in the provisioning of NG911 services or whether Congressional action is necessary.

166. In response to the Notice, numerous commenters argue that liability protection is essential as part of any extension of 911 requirements to include text. Commenters also assert that the lack of express liability protection for NG911 has hampered the deployment of NG911 networks. Commenters also argue that federal law requiring parity in state law protection does not adequately protect 911 and NG911 service providers because the scope of underlying liability protection is dictated by state law and varies from state to state. AT&T, for example, argues that “liability protection presently provided under the NET 911 Act is insufficient because it is tied to the protection afforded under various state laws and, often, a local exchange carrier’s tariff.” Motorola argues that “[n]ational consistency in liability protection will be essential to encouraging investment and promoting a smooth NG911 transition.”

167. Discussion. We recognize that adequate liability protection is needed for PSAPs, CMRS providers, third party interconnected service providers, and vendors to proceed with implementation of text-to-911 as contemplated in this Further Notice. The recent passage of the Next Generation 911 Advancement Act has significantly expanded the scope of liability protection and potentially resolved some of the issues raised by commenters by making clear that states must provide the same level of protection for NG911 as for traditional 911 and E911. We also note that under the Carrier-NENA-APCO Agreement, the four major wireless carriers have committed to deploy text-to-911 capability throughout their nationwide networks without any precondition requiring additional liability protection other than the protection that is provided by current state and Federal law. Nevertheless, we seek comment on whether there are additional steps the Commission could take – consistent with our regulatory authority – to provide additional liability protection to text-to-911 service providers. We also seek comment on whether the combined parity protection afforded by the NET 911 Act and the Next Generation 911 Advancement Act extends to all providers of text-to-911 service, regardless of whether such service is provided using pre-NG911 or NG911 mechanisms. We seek 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, or whether additional protection may still be needed or desirable.

### C. Legal Authority

168. We seek comment on the Commission’s authority to apply the automated error message and more comprehensive text-to-911 rules proposed herein to both CMRS providers and other entities that offer interconnected text messaging services (including third-party providers of “over-the-top” text messaging applications). In doing so, we incorporate herein the portions of

our 2011 Notice regarding the Commission’s authority to adopt text-to-911 rules. We note that, in response to our 2011 Notice, numerous parties addressed the Commission’s authority to adopt text-to-911 rules under the CVAA, Title III, and our ancillary authority. Since then, we have modified our proposals and taken into account recent developments regarding the deployment of text-to-911 offerings, including the recent Carrier-NENA-APCO Agreement.

169. We now ask parties to refresh the record on the legal authority issues and to address their comments to the particular rules being proposed herein. Specifically, we ask commenters to address the Commission’s authority under the CVAA to apply the proposed rules to this circumstance, and in particular to other entities that offer interconnected text messaging service. In this regard, we seek comment on how the Commission’s “authority to promulgate regulations to implement the recommendations proposed by” EAAC applies to this circumstance. Would the Commission’s decision to adopt the proposed text-to-911 rules implement EAAC recommendation P4.1, titled “Interim Text Access,” or recommendation T1.2, titled “Interim Mobile Text Solution”? Are there other EAAC recommendations relevant to our authority under Section 615c(g)? We also invite comment on how the Commission’s authority to promulgate “any other regulations, technical standards, protocols, and procedures as are necessary to achieve reliable, interoperable communication that ensures access by individuals with disabilities to an Internet protocol-enabled emergency network, where achievable and technically feasible” applies to these proposals, and in particular to other entities that offer interconnected text messaging service.

170. In addition to the CVAA, we ask commenters to address the Commission’s authority under Title III, including our authority under Sections 301, 303, 307, 309, and 316, to adopt the rules proposed herein. We note that, when analyzing our legal authority in the 2011 Notice, we

stated our “belie[f] that we have well-established legal authority under . . . Title III provisions to take the regulatory and non-regulatory measures described [t]herein that would apply to users of spectrum.” Since then, the D.C. Circuit provided additional guidance regarding the scope of our Title III authority in *Cellco Partnership v. FCC*. We now seek additional comment on our Title III authority in light of this decision.

171. Among other points, we seek comment on whether Title III grants the Commission authority to apply the proposed rules to third-party interconnected text providers and, if so, which specific provisions of Title III apply to them. Does the Commission’s Title III authority over those entities depend on how they offer their service? For example, does the FCC’s Title III authority over them turn on whether the entity holds a Commission’s license or other authorization, and, if so, whether such authorization is integral to that entity’s interconnected texting service? Do any third-party interconnected text messaging providers hold any such authorizations? We also ask commenters to address the Commission’s authority to impose regulations on CMRS providers that indirectly affect third-party providers. For example, does the Commission have authority to require CMRS providers to take steps to prevent the use of certain third-party applications that do not support text-to-911? If so, would such steps be consistent with the Commission’s open platform requirements for the 700 MHz C Block and other agency precedent?

172. We also ask commenters to address the Commission’s ability to rely on its ancillary authority to adopt the rules proposed herein. The Commission may act pursuant to its ancillary authority when “(1) the Commission’s general jurisdictional grant under Title I [of the Communications Act] covers the regulated subject and (2) the regulations are reasonably ancillary to the Commission’s effective performance of its statutorily mandated responsibilities.”

We ask commenters to discuss both prongs of this test. Would the Commission's decision to adopt the proposed rules be ancillary to certain Title III provisions, the CVAA, or other statutory provisions? Is application of the proposed rules to all providers of interconnected text-messaging services necessary to avoid consumer confusion or achieve the public safety benefits associated with applying such rules to CMRS providers? We seek comment on these questions.

#### **IV. PROCEDURAL MATTERS**

##### **A. Ex Parte Presentations**

173. The proceedings initiated by this Further Notice of Proposed Rulemaking shall be treated as a "permit-but-disclose" proceedings in accordance with the Commission's ex parte rules.

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

174. 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 Further Notice of Proposed Rulemaking on or before the dates indicated on the first page of this document.

Comments may be filed using the Commission's Electronic Comment Filing System (ECFS).

See Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://fjallfoss.fcc.gov/ecfs2/>.
- Paper Filers: Parties that choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

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

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries

must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

#### C. Accessible Formats

175. 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](mailto:fcc504@fcc.gov) or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

#### D. Regulatory Flexibility Analysis

176. As required by the Regulatory Flexibility Act of 1980, see 5 U.S.C. sec. 604, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules addressed in this document. The IRFA is set forth in Appendix B. Written public comments are requested in the IRFA. These comments must be filed in accordance with the same filing deadlines as comments filed in response to this 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

177. The 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, we seek specific comment on how we might “further reduce the information collection burden for small business concerns with fewer than 25 employees.”

## **V. ORDERING CLAUSES**

178. IT IS FURTHER ORDERED, pursuant to Sections 1, 2, 4(i), 7, 10, 201, 214, 222, 251(e), 301, 302, 303, 303(b), 303(r), 307, 307(a), 309, 309(j)(3), 316, 316(a), 332, 615a, 615a-1, 615b, 615c(a), 615c(c), 615c(g), and 615(c)(1) of the Communications Act of 1934, 47 U.S.C. sec. 151, 152(a), 154(i), 157, 160, 201, 214, 222, 251(e), 301, 302, 303, 303(b), 303(r), 307, 307(a), 309, 309(j)(3), 316, 316(a), 332, 615a, 615a-1, 615b, 615c, 615c(c), 615c(g), and 615(c)(1) that this Further Notice of Proposed Rulemaking is hereby ADOPTED.

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

List of Subjects in 47 CFR Part 20

Communications common carriers

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch,  
Secretary.

## Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 20 as follows:

### PART 20 – COMMERCIAL MOBILE SERVICES

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

Authority: 47 U.S.C. 151, 152(a), 154(i), 157, 160, 201, 214, 222, 251(e), 301, 302, 303, 303(b), 303(r), 307, 307(a), 309, 309(j)(3), 316, 316(a), 332, 615a, 615a-1, 615b, 615c, 615c(c), 615c(g), and 615(c)(1).

2. Section 20.18 is amended by adding paragraph (n) to read as follows:

#### § 20.18 911 Service.

\* \* \* \* \*

(n) Text-messaging for 911. CMRS providers subject to this section and third party interconnected text providers as defined in paragraph (n)(6) of this section shall comply with the following requirements:

(1) CMRS providers subject to this section shall provide an automated error text message that notifies consumers attempting to send text messages to 911 in areas where text-to-911 is unavailable or in other instances where the carrier is unable to transmit the text to the PSAP serving the texting party's location for reasons including, but not limited to, network congestion, the inability of the PSAP to accept such messages, or otherwise. The requirements of this paragraph only apply when the CMRS provider (or the CMRS provider's text-to-911 vendor) has direct control over the transmission of the text message. The automatic notification must include information on how to contact the PSAP. CMRS providers shall meet the requirements of this paragraph no later than June 30, 2013.

(2) No later than May 15, 2014, CMRS providers shall offer their subscribers the capability to send 911 text messages to the appropriate PSAP from any text-capable wireless handset.

(i) CMRS providers must provide their subscribers with at least one pre-installed text-to-911 option per mobile device model under a CMRS provider's direct control. The pre-installed text-to-911 option must be capable of operating over the provider's entire network coverage area.

Where a consumer has obtained the device from an unaffiliated third party and uses the device on a CMRS provider's network, CMRS providers must offer a text-to-911 application that the consumer can load on to the device.

(ii) To meet the requirement of paragraph (n)(2) of this section, CMRS providers may select any reliable method or methods for text routing and delivery. For example, CMRS providers may use Short Message Service (SMS), mobile-switched, or Internet Protocol (IP)-based methods for text routing and delivery.

(3) 911 is the designated short code for text messages sent to PSAPs.

(4) CMRS providers must route all 911 text messages to the appropriate PSAP, based on the cell sector to which the mobile device is connected. In complying with this requirement, CMRS providers must route text messages to the same PSAP to which they currently route 911 calls, unless the responsible local or state entity designates a different PSAP to receive 911 text messages and informs the carrier of that change.

(5) Roaming. When a consumer is roaming, both the home and visiting network operators must cooperate to support the delivery of the text to the appropriate PSAP serving the sender's location.

(6) Third party interconnected text providers. (i) All third-party interconnected text application providers that offer the capability for consumers to send to and receive text messages from text-

capable mobile telephone numbers shall send an automated error text message when a user of the application attempts to send an emergency text in an area where text-to-911 is not supported or the provider is otherwise unable to transmit the text to the PSAP for reasons including, but not limited to, network congestion, the inability of the PSAP to accept such messages, or otherwise. The automatic error notification must include information on how to contact the PSAP. Third party interconnected text providers subject to this paragraph shall meet the above requirements no later than June 30, 2013.

(ii) No later than May 15, 2014, all third party interconnected text providers that provide the capability for consumers to send to and receive text messages from text-capable mobile telephone numbers must offer the capability described in paragraph (n)(2) of this section during time periods when the mobile device is connected to a CMRS network.

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