BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

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

COMMENTS OF TELECOMMUNICATION SYSTEMS, INC.

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SUMMARY

TeleCommunication Systems, Inc. (TCS) shares the concerns of the Federal Communications Commission (FCC) regarding the implementation of text-to-911 service. As the FCC points out, current trends in mobile wireless usage have shown that wireless phones are evolving from a predominantly voice-driven medium of communication to one based more on data transmissions. The ability for the public to request emergency assistance via a mobile device – whether by voice or text – must evolve as well.

TCS agrees with the FCC that access to 9-1-1 is a core value that translates across communications platforms, including text applications, and should not be lost or devalued as technology changes.

As a global leader in location and messaging solutions and a recognized national pioneer in public safety solutions, TCS offers its expertise in addressing the messaging and location requirements contemplated in the FCC's Second Further Notice of Proposed Rulemaking (Notice). TCS currently is driving a nationwide deployment of infrastructure that will allow Commercial Mobile Radio Service (CMRS) providers of all sizes to deploy text-to-911 solutions using native Short Message Service (SMS) handset capabilities. These solutions are available to Over-the-Top (OTT) messaging providers, whether via SMS by proxy or by directly interconnecting to the infrastructure we and others provide. The models outlined in this Notice have merit, and the technical implementation of such models is possible. While location determination, whether precise or coarse and whether provided in the home network or while roaming, poses the greatest technical challenges to text-to-911 solutions, these challenges are being addressed by thoughtful network architectures and with standardized protocols.

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TeleCommunication Systems, Inc. (TCS) hereby submits these comments in response to the Second Further Notice of Proposed Rulemaking (Notice) released by the Federal Communications Commission (FCC, or the Commission) in the above-referenced proceedings. In the Notice, the Commission asks vital questions regarding Short Message Service (SMS) text-to-911 services, and seeks comment on the additional use of "over-the-top" (OTT) texting applications for text-to-911, among other topics. As a company uniquely credentialed in public safety, text messaging, and location technologies, TCS welcomes this opportunity to share its expertise and perspectives.

TCS' experience in Enhanced 9-1-1 (E9-1-1) began when it pioneered the first U.S. wireless E9-1-1 solution in 1997, and continues through recent deployments of some of the first true Next Generation 9-1-1 (NG9-1-1) systems in Iowa, Texas, and Tennessee. TCS also continually pioneers and improves the methods by which U.S. public safety answering points (PSAPs) receive a mobile caller's location during calls for emergency assistance. Today, TCS supports half of all U.S. wireless and nomadic Voice over Internet Protocol (VoIP) E9-1-1 calls.

Its award-winning wireline, wireless and VoIP E9-1-1 products, together with its E9-1-1 solutions, serve more than 140 million wireless and IP-enabled devices. As the only non-carrier TL 9000-certified company that supports E9-1-1 services, TCS provides highly reliable solutions that ensure a subscriber's emergency call routes to the appropriate PSAP and that the caller's location information is automatically delivered. Identified by research analysts as the global leader in precise location systems, TCS actively leverages its industry-leading location infrastructure to provide updated Phase II location information to PSAPs in order to provide life-saving resources quickly for each emergency mobile caller. TCS provides location infrastructure for both emergency (E9-1-1) and commercial location solutions, making TCS the nation's expert in location technology.

For messaging, TCS powers one-third of all U.S. SMS text message traffic, having delivered more than 4 trillion text messages to date and averaging nearly 2 billion messages per day. The TCS Short Message Service Center (SMSC) supports next generation messaging for mobile subscribers, and the TCS Text Control Center (TCC) provides a standards-compliant solution that enables SMS text-to-911 emergency texting.

TCS offers the following comments in response to specific questions posed by the Commission in Section III of its Notice.

DISCUSSION

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

1. The FCC's proposal that text-to-911 capability be made available by December 31, 2014, is reasonable.[1]

The FCC has sought comment on a proposal that text-to-911 capability should be made available by all text providers no later than December 31, 2014, and should be provided within a reasonable time after a PSAP has made a valid request for service, not to exceed six months. Based on our current deployment experience as a vendor, we agree that text-to-911 capability by December 31, 2014, is a reasonable deadline. The technical solutions are now widely available in the marketplace and the demand for such public safety services is clear.

We also agree that, upon receipt of a valid request for service from the PSAP, which infers technical readiness for the selected solution, a six-month maximum timeframe for deployment of text-to-911 services to that requesting PSAP is adequate. This presumes a text-to-911 readiness and adoption rate for PSAPs that resembles the readiness and adoption rate for the predecessor deployment of E9-1-1 for wireless voice services. However, if PSAPs were to make those requests in much larger volumes within a shorter timeframe (e.g., more than 1,000 valid requests in a quarter), text providers, text-to-911 vendors, and the PSAPs themselves might have difficulty successfully deploying text-to-911 within six months of a valid request every time. In such cases, we would presume (again, as was the case in the preceding deployment of E9-1-1 for wireless voice services) that reasonable extensions and exceptions to the six-month timeframe could be agreed upon by all parties. Furthermore, the six-month timeframe also presumes that the technical solutions for text-to-911 that are available today (namely, web services, TTY, and National Emergency Number Association [NENA] i3 SIP/MSRP solutions) remain valid and

[1] *See* Notice at P 13.

viable for the foreseeable future, or that any alternative solutions are not significantly more difficult to deploy.

2. The FCC's proposal that implementation of text-to-911 capability by CMRS providers be made available by December 31, 2014, is reasonable.[2]

We agree that CMRS providers other than the four signatories to the Carrier-NENA-APCO Agreement (those termed here as "small and rural providers") can be reasonably expected to provide text-to-911 services by December 31, 2014, because we believe the solutions for text-to-911 are both technically and financially practical for CMRS providers of any size.

While the various technical solutions for text-to-911 (namely, web services, TTY, and NENA i3 SIP/MSRP solutions) do vary slightly in their potential timeframe for deployment, typically text-to-911 vendors price their services in such a way as to scale with the size of a potential carrier customer's network. For instance, a provider may price its services on a per-cell-site basis or a per-PSAP basis. This then allows carriers of all sizes to purchase text-to-911 solutions at a cost relative to their size.

B. Timeframe for Interconnected OTT Text Providers

1. Similar timeframes are feasible for interconnected text providers.[3]

The FCC has sought comment on whether that same timeframe should apply to interconnected text providers. The technical solutions we have outlined above are available to support the interconnected text providers under similar timeframes, and place no new requirements on CMRS providers beyond what they are providing for SMS text-to-911.

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[2] *See* Notice at P 14.

[3] *Id.*, P 15.

C. OTT Text-to-911 Message Delivery Models

1. It is technically feasible for interconnected text providers to implement these models by the proposed deadline.[4]

The FCC has sought comment on whether it is technically feasible for interconnected text providers to implement OTT text-to-911 message delivery models by December 31, 2014. Based on TCS' experience with commercial applications on smartphones, TCS believes that there are no technical hurdles and that OTT providers can accomplish the functionality within the timeframes outlined by the FCC.

TCS provides a broad variety of commercially deployed location-based wireless applications, including navigation, family locator, workforce locator, and secure voice/messaging applications. Because of the requirements of our broad and international customer base, we have deployed these applications on a wide variety of devices and handset-based operating systems (OS), including iOS, BREW, and multiple versions of BlackBerry and Android. Our development teams frequently use the Application Programming Interface (API) available on the various devices which interact with the native SMS interface available on the device and which interconnect to the wireless operator's SMSC. These APIs are easy to use and hardened. Some OTT providers may wish to invoke the native SMS application rather than interface to the OS directly; again, the functionality for switching to another application on any given device is well understood and frequently used in many of the OTT applications that will be impacted by the proposed mandates. Having used all of these interfaces for various purposes within the applications that TCS provides, the proposed timeframes appear reasonable if the OTT providers begin their work within a reasonable timeframe. Some OS providers have a more

[4] *See* Notice at P 19.

stringent approval process, and leeway may be needed should delays occur, but TCS believes that the delivery of such functionality could be accomplished within a six-month timeframe.

2. *The method shown in Figure 1 is available to OTT providers and can be implemented by December 31, 2014.*[5]

Because the technical approach being recommended is currently being used by a wide range of commercially deployed applications, TCS believes that the proposed timeframes appear reasonable for SMS-based messaging. Some OS providers have a more stringent approval process, and leeway may be needed should delays occur, but TCS believes that the delivery of such functionality could be accomplished within a six-month timeframe. TCS would like to point out that, although Figure 1 also depicts Multimedia Messaging Service (MMS), J-STD-110 does not currently support MMS messaging. TCS' understanding of this FCC Notice is that MMS is outside of the scope of the proposed requirements.

3. *Most, if not all, cellular-enabled devices already provide the necessary interfaces to access the CMRS provider's messaging infrastructure.*[6]

As mentioned above, TCS has a broad range of experience with a wide range of device operating systems and agrees that most, if not all, cellular-enabled devices already provide the necessary interfaces to access the CMRS provider's messaging infrastructure as accessed by a native client on the device. To our knowledge, the CMRS provider does not need to take any specific actions beyond what they are doing to implement text-to-911 for their own SMS-based infrastructures. The OTT providers will need to interface with the development toolkits provided by the device OS manufacturers, just as they do today in order to build their OTT applications.

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[5] *See* Notice at P 21.

[6] *Id.*, P 22.

The device manufacturers have already performed the required work to interface with the CMRS providers and thus already provide those interfaces to the OTT messaging providers by proxy.

> 4. *A requirement to prevent CMRS carriers from blocking access to capabilities that would enable interconnected text providers to provide consumers using their OTT applications to send texts to 9-1-1 seems to be of limited value. However, the development of alternative messaging models that ultimately do not rely on the underlying SMS architecture should be encouraged.*[7]

CMRS providers continue to explore IP-based messaging solutions that could ultimately replace their existing Signaling System 7 (SS7) messaging infrastructures. Within these systems, the CMRS providers will be able to leverage standards-based messaging interfaces to allow the delivery of text messages into their infrastructure from outside applications, whether within the device's user interface or from the public Internet. The models suggested in this Notice are all consistent with this migration, and thus this Notice does not appear to preclude a CMRS provider from undergoing such a transition. The interfaces into the carriers' messaging infrastructures are currently open to third parties, and some of these interfaces are currently provided at no additional charge to the interconnecting entity, though the subscriber may be charged for either messaging or data transport. Given that there are both financial and practical incentives for CMRS providers to continue to supply these interfaces, it is unclear whether there would be much value in establishing a regulation that would prevent the CMRS provider from blocking these interfaces.

Similarly, based upon our experience, the device manufacturers currently provide messaging interfaces that allow applications on the device to deliver messages to the CMRS provider's messaging infrastructure. As long as the CMRS provider continues to maintain a messaging solution, whether SS7 or IP-based, such interfaces are likely to remain open for both

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[7] *See* Notice at P 23.

financial and practical reasons, and establishing regulations that would prevent them from instructing the device manufacturers to block these interfaces seems to be of limited value.

Of greater concern would be the decision of a CMRS provider to no longer provide an interoperable messaging solution, such as SMS, that interworks with other CMRS providers or the Internet. However, even if this should happen, other messaging models, including those described in Figures 2 through 4, could continue to provide a 9-1-1 solution for the OTT provider. This underscores the importance of developing alternatives that ultimately do not rely on the underlying SMS architecture, and TCS believes it is prudent for the FCC to consider such future scenarios.

5. *The models described in Figures 2-4 are consistent with a commercial implementation to support text-to-911.* [8]

TCS believes that the models described are consistent with a commercial implementation to support text-to-911. The model described in Figures 2 and 3 would use messaging interfaces, specifically Short Message Peer-to-Peer (SMPP) as defined in J-STD-110; Sec. 7.3.1, that are already supported by the TCC to interface with CMRS operators. In both of these models, the OTT messaging provider presents the mobile phone number of the wireless device that is supplied by the CMRS provider. Because the mobile phone number is known, the TCC could query the CMRS provider's network for location information using the same Mobile Location Protocol (MLP) interface as described in the model in Figure 1 and as defined in J-STD-110; Sec 7.3.2.

In Figure 4, the location of the device is presumed to be known by the OTT provider and would work even in scenarios in which the CMRS provider would not know the device's

[8] *See* Notice at P 27.

location. This model would require the TCC to query the OTT provider, rather than the CMRS provider, for the device's location. Though this location query could be performed, it is important to note that the veracity and trustworthiness of the location fix may be called into question. Relying solely on the device to determine its location invites the opportunity to spoof the device's location. This is commonly understood, though it requires an underlying understanding of the device's OS and somewhat sophisticated programming capabilities. Most application developers have such knowledge. Thus, the potential for "swatting"[9] exists in this model unless the OTT provider utilizes a "network-centric" approach to determine the location of the texter. By "network-centric," it is understood that the network plays a critical role in determining the location of the device, typically supplementing and validating information provided by the device itself. This final model would require additional development and specific interaction with the OTT provider compared to the models suggested in the previous three figures. In all cases, the OTT provider would still need to interface into the TCC in order to route the messages to the appropriate PSAP using the interfaces requested by the PSAP (e.g., TTY, web-based or i3-based message delivery).

Because the messaging and location protocols follow standards, are already deployed in most networks (especially the messaging interfaces), and are both hardened and well understood, the timeframes being suggested appear reasonable to TCS given our experience in using all of these interfaces in commercial applications.

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[9] The term "swatting" is used to describe a call to 9-1-1 in which the caller intentionally provides an incorrect location of the emergency. This typically happens in scenarios in which the location of the caller is not trusted or cannot be automatically determined, such as with noninitialized phones. Sometimes the caller provides an incorrect location verbally. In the context of the model described in Figure 4, the location information of the phone is intercepted by an application on the device and is modified such that an incorrect location is either presented or calculated.

D. Relay Services

1. Relay service providers should develop services to support communication with PSAPs that make sense for their business.[10]

The FCC has sought comment on whether relay service providers should develop direct text-to-text services to support communication with PSAPs that are text-capable, while expediting text-to-voice relay calls where the PSAP is not capable of receiving text messages directly from a caller.

Relay service providers will need to determine what makes sense for their business. Many relay service providers support more than emergency services. Certain users of relay service providers may choose to stay with their provider, as it provides all support through one mechanism. Others may stop using relay services for 9-1-1 support once text-to-911 becomes ubiquitous. Relay service providers should be able to utilize the TCC for ingress into the 9-1-1 infrastructure.

In order for relay providers to reuse TCC infrastructure, "on-behalf-of" standardized call flows would need to be defined. The TCC needs to know the location of person/device that is requesting help so that the TCC can determine the proper PSAP or Emergency Services IP network (ESInet) to egress to. In this use case, the texter is the relay service provider. Flows will need to be created so that relay service providers that are functioning on behalf of the user will function properly, utilizing the location of the user requesting help, not the location of the relay service operator/facility.

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[10] *See* Notice at P 31.

E. PSAP Implementation

1. There are few external barriers to PSAP implementation of text-to-911 services.[11]

The FCC has requested information regarding barriers to PSAP implementation of text-to-911 services.

TCS is engaged with a significant number of jurisdictional entities, representing more than 2,000 PSAPs, that have requested information regarding text-to-911 service. The industry has developed a choice of several standardized text-to-911 delivery options to encourage and enable PSAP readiness. What follows is a brief description of each solution and how each varies from the PSAP perspective:

a) **Web Services Solution.** This option includes a client application running in a web browser that gives the PSAP call taker the ability to receive, view, and respond to the SMS emergency request. The web client provides an interactive map control that displays the location of the SMS sender. This approach enables efficient deployment to the PSAP environment with limited disruption to the PSAP for training, as there would be no requirement for integration, interoperability, and testing with existing PSAP call processing equipment (CPE). The web browser provides a rich and intuitive graphical user interface (GUI) that would allow the PSAP call taker to quickly get up to speed with the features of the web-based client.

b) **NENA i3 SIP/MSRP Solution.** For PSAPs that utilize Message Session Relay Protocol (MSRP) or that are served by an i3 ESInet, this solution transmits a series of related text messages in the context of a session. The session signaling is established using a Session Initiation Protocol (SIP) INVITE and uses MSRP for media, configured using the Session

[11] *See* Notice at P 34.

Description Protocol (SDP). These messages are part of a managed media dialogue that provides ordering, a security context, and other functions.

c) **TTY Solution.** This solution applies to PSAPs that choose to use their existing TTY interface where call-taker stations are configured for TTY communication and have the ability to use the legacy 5 bit encoded Baudot for text communication.

F. Phase II-Equivalent Location for Covered Text Providers

1. Network-centric Phase II equivalent location can be provided.[12]

The FCC has sought comment on the capabilities of CMRS providers to deliver Phase II equivalent location information. ATIS/TIA J-STD-110 currently allows for updated location requests (a.k.a. "rebids") from the PSAP. The standard also clarifies that the originating network must supply a capable location platform in order that updated location can be made available. The type of location platform used is not specified, although it is generally described as a commercial location platform. Commercial location platforms typically have the ability to provide network-centric location for routing and, in some cases and to determine a more accurate end device location, provide an enhanced (Phase II compatible) position estimate for location. Existing E9-1-1 (voice) location platforms are incompatible with SMS text-to-9-1-1 requirements based on how the E9-1-1 systems were designed to operate in conjunction with an active voice call (see J-STD-036).

For SMS emergency text requests, we recommend that coarse location used for routing be determined by network-centric location technology, rather than allowing end device application-managed location solutions. These application-managed location solutions place too much reliance on handset environment, configuration, and capability and are subject to security

[12] *See* Notice at P 35.

threats, including authentication and location spoofing. Emerging standards for attaining trusted location information should be considered in any approach, such as is discussed in the Internet Engineering Task Force (IETF) workgroup draft, *Trustworthy Location.*

2. *Phase II compatible location technology is readily available today to CMRS providers.*[13]

While additional standards development efforts may be required for "indoor location" initiatives, updated (Phase II compatible) location technology is readily available today to CMRS providers as deployed/deployable commercial location-based (cLBS) platforms, both as control plane and user plane configurations. These cLBS platforms support 2G, 3G, and 4G networks. Each location architecture varies as to its respective requirements on network elements and handsets. The current J-STD-110 defined standard has the ability to request updated location to an originating network's location platform, but currently does so via the Open Mobile Alliance (OMA) MLP. Location updates obtained from interconnected OTT text providers represent a more challenging problem due to the interaction needed between OTT and CMRS providers. As shown in Figure 1, one approach for interconnected text providers to leverage the existing J-STD-110 architecture is accomplished by requiring that emergency text message requests reuse existing SMS APIs in the device, effectively changing the OTT text message interaction into an SMS message dialogue, whether still viewed through the original interconnected text application or not. This would require OTT text application software modifications, but represents the shortest path to having support for emergency OTT text. The J-STD-110 standard scope could be extended to include this and other potential solutions.

[13] *See* Notice at P 36.

3. *Interconnected text providers could reasonably adopt and implement the required changes within the FCC-recommended timeframe.*[14]

Relating to Figure 1, based upon our own experience in developing handset-based applications, we believe is it reasonable for interconnected text providers to accomplish the required changes within the timeframes being recommended by the FCC. The level of effort required to effect these changes should be limited and would not require standards development ahead of time, although informative standards would need to eventually document the overall scope of each solution used.

4. *OTT providers must utilize CMRS location solutions or create their own trustworthy location solutions.*[15]

Any text-to-911 service offered should be able to support authentication and authorization by the Mobile Network Operator (MNO). All text-to-911 subscribers should be identifiable with an identity that could support callback to the subscriber. Relating to potential solutions shown in Figures 2, 3, and 4, a J-STD-110 defined TCC provides a control point for management of text message requests from interconnected text providers as well as an aggregation point for location requests issued to CMRS providers. We see any of the following solutions as viable:

- OTT text using fallback to SMS and the existing CMRS text solution. Location acquisition is unchanged from the existing J-STD-110 based deployed systems.
- OTT text requests using a CMRS-supplied and -authenticated data connection to a CMRS-contracted TCC. Location acquisition is managed by the TCC and supplied by the CMRS provider's network.

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[14] *Id.*, P 37.

[15] *See* Notice at P 38.

- OTT text requests using any data connection available, connected to an authenticated TCC host. Location is supplied either by a CMRS provider or the access network.

This is supported for all text-to-911 use cases within the macro cellular network. 3GPP TS 23.234 defines Interworking Wireless LAN (I-WLAN), including connectivity and access, authentication, and authorization (AAA). This specification allows for connectivity to the MNO while not directly connected to the macro cellular network. Text-to-911 should be supported for I-WLAN as well. Text-to-911 should not be supported for any subscriber, device, or location technique that can't be authenticated or authorized. Advances in the OMA Secure User Plane (SUPL) protocol enable a multitude of location techniques that are not dependent on the macro cellular network. These include WiFi, Bluetooth, Sensors, and QR Codes. This enables Phase II location where the subscriber is not connected to the macro cellular network via interworking or is completely off network. The Indoor Location Alliance is also looking at several non-cellular-based location techniques.

G. Roaming

1. Several approaches are available to CMRS providers for location determination in order to support location roaming.[16]

The FCC has sought comment on its view that access to 9-1-1 via text is just as critical for roaming consumers as it is for consumers utilizing a home carrier's network, and that roaming is also particularly critical for customers of small or rural carriers, who rely on roaming when traveling outside the regional footprint of these carriers.

[16] *See* Notice at P 42.

Text-to-911 implementation is based on two significant assumptions that differ from traditional E9-1-1 voice calls. Whereas wireless E9-1-1 that supports emergency voice calls relies on serving networks' elements and procedures, SMS text-to-911 messages are sent to the home network based on the SMS design architecture. Secondly, during an emergency text dialogue, the current E9-1-1 emergency services location nodes are not able to be used, as there is no voice call in progress.

Current text-to-911 implementations are either utilizing their commercial location servers or standing up new location servers. MNOs have not implemented widespread location roaming based primarily on business decisions, rather than technology limitations. In order to support location roaming, CMRS providers can select from a few approaches for location determination:

- MNOs that have cooperative voice roaming arrangements could have shared cellular databases (e.g., base station almanacs) to support location roaming for coarse and enhanced location.
- MNOs can deploy their cellular databases to a trusted third-party location provider. This allows each MNO to protect their cell tower location from other MNOs. This also can enable enhanced location determination.
- Location roaming can be enabled via core network interconnectivity between MNOs, sometimes referred to as a "mesh network."
- Standards-defined location roaming protocol support by MNOs, such as OMA Roaming Location Protocol (RLP) can be provided via an interconnected location architecture, sometimes referred to as a "centralized hub."

2. *The cost of routing roaming text-to-911 calls to the correct, nearest PSAPs on the roaming carrier's network would vary depending on the method used.*[17]

For operators that decide to share their cellular base station almanac database either with each other or with a trusted third-party location provider, costs for loading and maintaining the data would be minimal.

For operators that interconnect their core networks, there is significant cost in the provisioning and maintaining of circuits and network nodes. Small operators that utilize a shared core network service would incur additional fees to support the additional traffic for text-to-911.

For operators that connect their core networks to a centralized hub, significant interconnection cost savings could be realized, since this approach avoids a mesh-network connection between all MNOs. As the centralized hub can support either RLP or MLP to the downstream serving location server, the serving location server may simply have to configure access to the centralized roaming hub and immediately benefit from all other MNOs connected to that hub.

3. *Regarding a roaming text-to-911 requirement, TCS suggests a hub-and-spoke roaming router that interconnects MNOs that support voice/text roaming relationship.*[18]

TCS currently implements a text-to-911 solution in which messages are served by the home network. This decision forces a minimal set of changes in the base SMS processing of messages. Given this assumption, the major hurdle is location roaming, which has not been widely implemented. Well-defined standards in OMA for the MLP and RLP exist and have been implemented at MNOs. TCS recommends that a hub-and-spoke roaming router be provided that interconnects MNOs in support of their voice/text roaming relationships.

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[17] *See* Notice at P 44.

[18] *Id.*, P 46.

In order to support text-to-911, the MNOs must support some kind of network-initiated location service. These MNOs can cost-effectively add RLP support to their location platforms, allowing them to interconnect with the RLP hub. Once connected with the RLP hub, text-to-911 roaming will be supported.

If the MNO has precise location capabilities implemented in its network, that precise location capability would be available to all roamers into the network from MNOs connected to the hub.

If roaming is implemented via the hub-and-spoke MLP/RLP protocols, initial implementations with operators could start within six months, with full requirement within 18 months.

H. Liability Protection

1. OTT providers and TCCs should be afforded liability protection.[19]

The FCC has sought additional or updated information relevant to our consideration of this issue including the possible risks and costs of implementing text-to-911 without liability protections in place.

The NET 911 Improvement Act of 2008 provides liability protection for "other emergency communication providers." TCS believes that, in enacting the NET 911 Act, Congress anticipated that certain improvements to the 9-1-1 infrastructure would involve entities other than Local Exchange Carriers (LECs) and VoIP and CMRS providers, and that Congress intended and directed the FCC to ensure that these new entities would be afforded liability protection. Section 201 of this bill, which outlines liability protections, describes "other emergency communication providers" as "an entity other than a local exchange carrier, wireless

[19] *See* Notice at P 49.

carrier, or an IP-enabled voice service provider that is required by the Federal Communications Commission consistent with the Commission's authority under the Communications Act of 1934 to provide other emergency communications services." Consequently, TCS believes that the text-to-911 service, if mandated as prescribed, would qualify as an "other emergency communication service" and hence OTT providers and TCCs would be afforded liability protection.

I. Waivers

1. Neither financial difficulty nor technical infeasibility is an adequate basis for granting extended waivers.[20]

The FCC has sought comment on what factors or other considerations would be relevant to the Commission in evaluating whether a wavier would be appropriate.

As indicated earlier, the development complexity of the FCC recommendations is not anticipated to be large and is certainly not out of the scope of other applications that use SMS interfaces to communicate. However, some OS providers require stringent testing before allowing the publishing of any OTT application. Passing these testing requirements is outside the direct control of the OTT provider and could create delays. However, such delays should not reasonably go beyond a six-month extension window, and most OTT providers should be able to comply within the necessary timeframe. Those OTT providers that deploy their application on multiple device OS might also need more time to provide a consistent interface across all platforms.

Financial difficulty or technical infeasibility should not be reasons by themselves to require waivers. The FCC-proposed solution does not require specific interconnection to a TCC

[20] *See* Notice at P 51.

and therefore has no ongoing costs beyond what the CMRS providers are already bearing. The costs of delivering an SMS are typically borne by the user and will be the same costs as the CMRS provider will charge (and may be free to the user).

J. Future Evolution of Texting Services

1. The definition of interconnected text should also be interpreted to include a service that utilizes IP-based protocols for outgoing text and SMS-based protocols for the return text.[21]

The FCC has sought comment on whether its definition of interconnected text should also be interpreted to include a service that utilizes IP-based protocols for outgoing text and SMS-based protocols for the return text. TCS believes that an OTT provider that presents the ability to construct, from features it offers, a service that sends and receives text messages between essentially any data-capable device should be required to fulfill the same 9-1-1 obligations as an OTT provider that provides such a service via one interface. It would be contrary to the FCC's intent to provide life-saving solutions to the public if it allowed an OTT provider to shirk its public safety responsibility by artificially segregating such services, when its customers usually combine such services. Unfortunately, a consumer does not usually think about scenarios involving the need to access emergency services when focusing on communications purchases; but that same consumer has expectations that his communication services will access the public safety infrastructure in those rare cases when such access is critical.

[21] *See* Notice at P 56.

2. *Consumers expect that both direct and indirect text messaging services will have the ability to connect to text-capable telephone numbers.*[22]

TCS believes that any OTT messaging service that presents the user with the ability to send messages to another user by either directly or indirectly entering the target phone number is likely to be reasonably expected to provide a text-to-911 service. By "indirectly," we mean that the user may assign a name to the destination but is required to provide a destination phone number in order to complete the entry. Any service that encourages a user to turn off his or her SMS service or which advertises itself as a replacement to the user's SMS service should take on the same public safety responsibilities as the CMRS provider.

CONCLUSION

In summary, TCS supports the concepts outlined in this Notice of Proposed Rule Making. Text messaging, whether as a native SMS interface by the CMRS provider or as an OTT messaging solution provided by a third party, should allow access to our 9-1-1 public safety infrastructure in the case of an emergency. The timeframes proposed by the FCC appear adequate, and the major CMRS providers are already implementing the text-to-911 service for their SMS-based messaging solutions. There are no technical impediments for other CMRS providers to implement a similar solution, and the business models are typically priced to scale. OTT messaging providers can take immediate advantage of the text-to-911 solution being provided by CMRS providers by implementing a "fallback to SMS" solution. These SMS-access mechanisms exist in all devices and operating systems with which TCS has worked, and are both hardened and easy to use. Further, OTT providers have the option of directly connecting with TCC providers and should consider this approach in the longer term, separating their dependence

[22] *Id.*, P 58.

on the CMRS provider's SMS access to 9-1-1 infrastructure. Providing precise location solutions depends only on the strengths and limitations of the commercial solutions that the CMRS providers have deployed. Network-centric location solutions with built-in authentication and validation capabilities should be utilized; these should be used in lieu of application-managed location solutions that may rely too heavily on information provided by the device that can be spoofed or compromised. Location roaming is today a business challenge, not a technical challenge; and cost-effective models exist that would promote the location roaming required to support text-to-911 access. Given the fast and widespread adoption of OTT messaging solutions, we believe that the public reasonably expects these solutions to provide access to 9-1-1 emergency services and artificial business models should not allow OTT providers to shirk these responsibilities.

Respectfully submitted,

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