

**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 No. 11-153
)	
Framework for Next Generation 911 Deployment)	PS Docket No. 10-255
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COMMENTS OF T-MOBILE USA, INC.

Introduction and Summary

T-Mobile USA, Inc. (“T-Mobile”) applauds the Commission’s efforts to accelerate the transition to next-generation 911 and E911 services. One benefit of the deployment of IP multimedia subsystems (“IMS”) and Long Term Evolution (“LTE”), or other advanced radios, will be the ability to more efficiently handle and deliver many different types of emergency communications beyond voice. That promise can be realized – but only if there is a focus on creating and advancing an end-to-end next generation system. It will do little to ask carriers to be ready to deliver types of emergency communications that few PSAPs are able to handle and few consumers know are available. Similarly, unless a substantial number of neighboring PSAPs have upgraded to next generation, IP-based capabilities, PSAPs will not be able to easily load-share – which is a way of reducing the risk that 911 calls go unanswered during a calamity such as an earthquake, hurricane or tornado.

The Commission should remain focused on facilitating the long term transition – including providing for an orderly mechanism to transition all PSAPs in a particular region or

state simultaneously, rather than on a one-off basis. The Commission should avoid the fragmented deployment that marked Phase 2 E911 services, which are still not ubiquitous. With Phase 2 E911, technologies were mandated and pushed out before adequate development, standardization, and integration. One possible way to address this potential for fragmentation could be look at lessons learned in implementing CMAS, in which standards were developed and carrier participation was voluntary but in which carriers had an incentive to participate in order to be able to be perceived as providing a state-of-the-art safety feature.

Moreover, as the NPRM recognizes, non-voice NG911 poses an even greater challenge to implement than voice because consumers will have to be aware of which capabilities are available in various locations. At a minimum, the consumer education difficulties should auger for a national or regional approach to the NG911 transition, rather than utilizing the one-off PSAP request system that has characterized the Phase 2 E911 deployment process. Ensuring that regions migrate to NG911 together also lays the foundation for peak-period load-sharing among PSAPs, leveraging the fact that disasters can be highly localized so that neighboring communities can help a hard-hit community maintain 911 response even during times of heavy 911 calling.

The Commission should not divert its or stakeholders' attention into pursuing short-term interim SMS-to-911 solutions. As 4G Americas previously documented, and as ATIS' Interim Non-Voice Emergency Services Report and Recommendations ("INES Report and Recommendations") confirms, SMS remains highly flawed as a vehicle for 911 communications, despite its popularity and ubiquity. These flaws cannot be readily addressed, especially for an interim solution that will last only for the few years until carriers deploy IMS-based solutions, including with LTE and other advanced radios. All promised SMS-to-911 solutions – regardless

of the vendor – suffer from the same fundamental problem that SMS cannot be used for 911 communications until PSAPs have equipment in place that can receive, process, and reply to SMS messages. This does not even begin to address the problems of a lack of support for roaming, or of the need to retrofit the soon-to-be-obsolete, out-of-band signaling system to perform a function for which it was not designed – and which will never be able to provide autolocation. By the time any “interim” solution could be implemented on a wide scale, it is likely that true non-voice NG 911 alternatives would already be starting to appear.

For the near-term, for individuals with hearing or speech disabilities, there are existing alternatives that can work reliably with all PSAPs, without requiring PSAPs to acquire new equipment and to implement new processes. Through IP Relay (as well as VRS for smartphones with front-facing cameras), the Commission has established an infrastructure that allows any hearing or speech-impaired individual with an appropriately capable handset to reach any PSAP using 911, without the PSAP having to make any technological upgrades. Indeed, the Commission has worked hard over the past 3 years to implement ten-digit dialing and 911 for IP Relay, which can now be accessed from mobile phones capable of running instant messaging clients (such as AIM). Moreover, because that system utilizes IP Relay providers’ existing interpreter capacity, but requires them to prioritize the handling of 911 calls, those providers can handle fluctuations in 911 call volumes.

The Commission also should not mandate priority access to wireless carriers’ Radio Access Networks for 911 calls. There are a number of technical challenges to prioritizing 911 calls and under the current PSAP implementation it is unlikely that such a mandate would meaningfully increase the number of 911 calls that can be serviced due to capacity limitations at the PSAPs. During the August 2011 East Coast Earthquake, in hard hit areas such as the

Washington DC region, T-Mobile's experience was that, once they were on T-Mobile's network, 911 calls successfully passed through T-Mobile's network to the PSAPs, but a substantial majority were then unable to be completed, usually due to ESRK or other PSAP-specified or LEC-specified capacity constraints. In the Washington DC region, approximately 84% of 911 calls that were handled by T-Mobile's switches do not appear to have been successfully handled by the public safety networks. Like everyone else, PSAPs were overwhelmed. Just as pouring more water into an overflowing funnel will not increase the amount of water that flows out of the bottom, adding more 911 calls into the wireless carrier networks will not increase the number of 911 calls that PSAPs can handle during a surprise surge such as the East Coast Earthquake. With reports that many of the Earthquake-related calls were to 911 merely to confirm that an earthquake had indeed occurred, the public clearly needs to be educated that such calls are not appropriate 911 calls. 911 is not a public information vehicle. It is to be hoped that the Commercial Mobile Alerting Service (CMAS) will be leveraged to help to reduce these "public education" types of calls to 911.

I. TRANSITION TO NG911 WILL REQUIRE A STRONG COMMISSION FOCUS ON, AND FACILITATION OF, THE LONG TERM OBJECTIVES INCLUDING NON-VOICE EMERGENCY SOLUTIONS.

As T-Mobile stated in its comments on the Commission's Notice of Inquiry, the Commission should be cognizant of the lessons learned from both wireless and VoIP E911 as it pursues the transition to NG911, both for voice and non-voice services.¹ NG911 entails a comprehensive change to the 911 system that will require the participation and cooperation of many parties. To the extent regulation is necessary to facilitate NG911 implementation, the

¹ See Comments of T-Mobile at 1 (filed Feb. 28, 2011).

Commission must ensure that all parties cooperate to take necessary action. Divisions of responsibility will need to be clear and enforced.

There were many problems that arose over the course of the implementation of Phase 2 Wireless E911, which then extended to VoIP 911. Fundamentally, the Commission chose to approach this on a PSAP-by-PSAP basis. This led to technology fragmentation and rollouts that could not be regionally coordinated or planned. From a consumer perspective, consumers could not have a good sense of what E911 capabilities were available in their location, because each PSAP chose whether to implement Phase 0, Phase 1 or Phase 2 E911. Technology vendors frequently enticed the Commission with promises of service levels on which they could not deliver. Then the Commission implemented E911 by placing mandates only on one party – the wireless carriers – and not placing commensurate obligations on the other actors necessary to make the entire system work, including local exchange carriers, PSAPs, network vendors, and handset vendors, which led to a fragmented implementation. Similarly, when the Commission mandated the provision of E911 by interconnected VoIP providers, it placed no requirements on LECs or PSAPs to supply necessary elements or functionalities for the implementation of those E911 services. It took an act of Congress – the NET 911 Act² – to ensure that interconnected VoIP providers would have access to the network and other functionalities needed to implement interconnected VoIP E911 services, including interconnection, trunking, and access to Master Street Address Guides.³

These issues will be especially important for the Commission to address with respect to non-voice emergency services, such as text. Given that the services are mobile, and thus will

² New and Emerging Technologies 911 Improvement Act of 2008, Pub. L. No. 110-283, 122 Stat. 2620 (2008) (“NET 911 Act”) (codified at scattered sections of 47 U.S.C.)

³ See 47 U.S.C. § 615a-1.

move between PSAPs, it is critical that PSAPs be incentivized to work together in a region to be ready to handle non-voice emergency services. The non-voice emergency services systems will not work for consumers if a consumer can send a text to 911 in New York City, but not in northern New Jersey, in San Francisco, but not Oakland, or in Pensacola, but not Mobile or New Orleans.

It is the whole solution that must be engineered and developed in each region, not just piece parts. Thus, NG911 will not be successfully implemented without focused effort not just on what carriers should be required to do, but also on what other stakeholders must do as well. The Commission must also respect the limits of technical and economic feasibility as required by the Administrative Procedure Act.⁴

A. DEPLOYMENT AND IMPLEMENTATION OF IMS AND MMES PROVIDES THE LONG TERM ROUTE TO UBIQUITOUS TEXT TO 911 THAT CAN BE AUTOLOCATED, BUT END-TO-END STANDARDS AND PROCESSES NEED TO BE BOTH DEVELOPED AND INTEGRATED.

There appears to be a consensus that the long term route to a full text-to-911 solution – one that can be integrated with other modes of communications to 911 and that can be autolocated (to the extent autolocation technologies are available) – is through the implementation of IMS and Multimedia Emergency Services (MMES). And because these advanced systems are only now starting to be implemented, carriers have the opportunity to build in these functionalities at the start, rather than retrofitting a long-deployed technology.

⁴ See *Nuvio Corp. v. FCC*, 473 F.3d 302, 303 (D.C. Cir. 2006); *Alliance for Cannabis Therapeutics v. DEA*, 930 F.2d 936, 940 (D.C. Cir. 1991) (“Impossible requirements imposed by an agency are perforce unreasonable: ‘Conditions imposed by [the] order are ... unreasonable by virtue of being impossible to meet.’ *D.C. Transit Sys., Inc. v. Washington Metropolitan Area Transit Comm'n*, 466 F.2d 394, 402 (D.C.Cir.), cert. denied, 409 U.S. 1086, 93 S.Ct. 688, 34 L.Ed.2d 673 (1972)”).

Successful implementation for consumers, however, requires more than just writing the standards for interfaces between PSAPs and wireless carriers. Handset vendors will need to be involved in developing interfaces and user interface experiences. To the extent that consumers are using over-the-top applications, emergency communications via those applications have to be the responsibility of the over-the-top provider, not the underlying carrier. The underlying regional PSAP networks will also need to be in place. These various individual systems will need to be able to work together.

While moving forward with its NG911 efforts, the Commission should heed the lessons learned from the implementation of wireless and VoIP E911. First, simply mandating that last-mile wireless carriers provide 911 data will not be enough to reap the benefits of NG911 services. PSAPs need to have the equipment and operational procedures in place to receive and utilize NG911 data. PSAP readiness is especially crucial with respect to non-voice emergency communications as those functionalities generally do not exist in PSAPs today and would be new. Clear processes need to be in place for determining when a PSAP – or, as noted below, a region – is ready. In addition, the delineation of responsibilities between service providers and PSAPs must also be clear because, in the NG911 network, there will no longer be a selective router to form the demarcation point between the PSAP and service provider responsibilities.

The Commission should make every effort to ensure a flexible transition to NG911 with realistic expectations. NG911 services beyond voice will require new handset functionality. PSAPs will not receive new NG911 services immediately upon deploying a NG911 network if those services have not yet been standardized and implemented by service providers and others, and they should not be led to believe otherwise. PSAPs (or groups of PSAPs) may also need to deploy interim systems during the transition to address the situation in which some carriers may

be signaling in IP and some in legacy formats, or in which some PSAPs may be capable of only receiving IP or legacy signaling.

One way to address this may be to look at lessons learned in deploying CMAS. In CMAS, standards were developed, and carriers were permitted to elect to participate, and allowing gradual handset and network rollout. In the development of the standards, all stakeholders had an incentive to participate in developing reasonable solutions. From the carrier perspective, competitive pressures made it imperative for a carrier to be able to participate, but other stakeholders could not insist on the unachievable, or no one would be able to participate. The NG911 process will likely be even more complicated because of the multiplicity of public safety agencies involved. The Commission must look to regulatory structure that provides all of the stakeholders with incentives to participate in a developing standards and deploying the necessary technology.

B. THE COMMISSION NEEDS TO WORK WITH PSAPS AND INDUSTRY TO DEVELOP PROCESSES THAT WILL TRANSITION REGIONS OR STATES TO NG911 SIMULTANEOUSLY.

The NPRM seeks comment on whether PSAP-based “triggers” should be used for non-voice NG911 implementation. The Commission should not focus on PSAPs, but on states or regions.

The Commission should ensure that there is at least a substantial level of regional coordination with respect to the conversion to, and implementation of, NG911 systems. Absent such coordination, interoperability benefits will be lost. NG911 implementation costs for carriers may also be substantially higher if carriers in the same region have to simultaneously support legacy 911 systems with interconnections to selective routers via ILEC tandems to serve

those PSAPs that remain on legacy systems and at the same time support NG911 systems for those PSAPs that have upgraded their operations.

One way to do this would be to ask states to determine when there was a sufficient critical mass of PSAPs ready to convert to NG911, and that all PSAPs within the region should then be required to convert to NG911 interfaces. Pursuing such a course would put the responsibility in the right place – the state – for ensuring that all PSAPs in an area are ready to move to NG911.

What will not work well – from either a consumer or a carrier perspective – would be to leave the implementation of NG 911 to a PSAP-by-PSAP decision-making process. That risks consumer confusion, duplicative network costs for PSAPs and providers, and delaying the entire conversion process nationwide. Moreover, one-off NG911 implementation will not ensure that PSAPs in a region are interconnected and can support each other during peak calling periods. In mass emergencies, such as earthquakes, floods, hurricanes or tornados, PSAPs can be overwhelmed by 911 calls. Particularly if the emergency is limited to one or two communities, load-sharing provides a potential solution to the problems of 911 calls being blocked because of inadequate PSAP answering capacity at that point in time. This problem of localized peaks can be mitigated if all, or nearly all, communities in a region share the burden of overflow 911 capacity within that region. To do this, however, all or nearly all PSAPs in a region must be interconnected with one another and have upgraded to NG911. Enabling these types of safety-enhancing solutions is another reason to migrate to NG911 on a regional or state basis.

II. MANDATING AN INTERIM SMS-TO-911 SOLUTION IS COUNTERPRODUCTIVE AND COULD HARM RATHER THAN ENHANCE PUBLIC SAFETY.

No one doubts that it would be beneficial to have a means of texting to 911. It would be even better if SMS could be a reliable means to reach 911 because SMS is a form of text that is familiar to nearly all wireless consumers and that is already readily available in handsets.

Unfortunately, as 4G Americas demonstrated in a report last summer – the core of which is not refuted by any commenter – SMS’ technical characteristics make it undesirable for use as an emergency communications technology, especially as an interim tool to be available until IMS-based Multimedia Emergency Services are available.⁵ More recently, in their August 31, 2011 *ex parte*, 4G Americas again concluded that “SMS-to-911 has significant limitations, not the least of which is substantial widespread modifications at PSAPs that state and local governments can ill afford. SMS-to-911 is simply not viable. The Commission should not propose that carriers implement SMS-to-911.”⁶

A. The Potential Harms of SMS-to-911 Outweigh Its Potential Benefits as an Interim Solution

SMS was not designed to work with 911: it is one-way rather than session-based (making it extremely difficult, if not impossible, to ensure that messages are routed between the caller and the same PSAP operator); does not recognize three digit dialing patterns; has no guaranteed delivery and gives no indication to the sender when a message has not been completed; has no way to ensure that messages arrive in proper sequence; is at odds with 911

⁵ See 4G Americas, *Texting to 9-1-1: Examining the Design and Limitations of SMS* (October 2010) at 5, available at <http://www.4gamericas.org/documents/SMS%20to%20911%20White%20Paper%20Final%20October%202010.pdf> (“4G Americas White Paper”).

⁶ See Letter from Patricia Paoletta, counsel to 4G Americas, to Marlene H. Dortch, FCC, at 2 (filed Aug. 31, 2011).

voice calling by roaming networks; does not support 911 location technologies because of the limited transmission time; and, has significant security vulnerabilities that could result in PSAPs being deluged with fraudulent or abusive 911 texts.⁷ Each of these flaws negatively affects public safety and offsets the perceived advantages of SMS.

In the comments filed in response to the NOI, a wide range of commenters found SMS unsuited to be a 911 access technology. As NENA stated, “Today, SMS lacks many of the characteristics needed to support quality emergency communications.”⁸ NENA therefore “does not advocate the use of SMS as a means to access 9-1-1 systems.”⁹ APCO similarly noted, “there are a number of Quality of Service concerns with the use of SMS to 911.”¹⁰ ATIS explained, “current SMS standards do not support the most critical elements of an emergency communications network – automatic routing to the designated public safety answering point (‘PSAP’), the automatic provision of a sender’s location information to the PSAP, reliability or priority.”¹¹

⁷ PSAPs today complain about the volume of prank 911 calls that are enabled by non-service initialized handsets. Whether service initialized or not, the greater anonymity available from text – especially when Caller ID can be readily spoofed – will likely lead to a flood of false SMS-based prank communications to PSAPs.

⁸ Comments of the National Emergency Number Association (“NENA”) at 14 (filed Feb. 28, 2011).

⁹ *Id.*

¹⁰ Comments of APCO at 4 (filed Feb. 28, 2011). *See also, e.g.*, Comments of the St. Louis County Emergency Communications Commission at 4 (filed Feb. 28, 2011).

¹¹ Comments of ATIS at 5 (filed Feb. 28, 2011). T-Mobile has done some work with respect to potential methods to route SMS “911” messages automatically to the appropriate PSAP and to potentially provide cell-sector location (but not Phase 2 handset location). However, that theoretical developmental work does not address the myriad of other technical and systems operation and implementation problems that must be addressed by both carriers and PSAPs in order to have a workable SMS-to-911 system.

The advocates of SMS-to-911 do not deny that networks would need to be modified in some way to provide SMS-to-911 capabilities. Indeed, among technology vendors, each proposed that the Commission push carriers to adopt and install its product. But no set of modifications to the existing CMRS SMS networks can be implemented rapidly, as all would need to be tested to make sure that they can actually work within an operational 911 setting, and then carriers and PSAPs would have to install the necessary capabilities. That process by itself is likely to take at least a couple of years, and would thus consume the bulk of the interim period prior to IMS being deployed.

Not only would SMS networks have to be retooled to support SMS-to-911, but PSAP networks would have to be modified as well. PSAPs are not configured to receive SMS texts nor do they have procedures and training in place to handle them. Installing that capability, developing those procedures and conducting the necessary training all takes time and resources. Yet non-voice NG911 cannot be successfully deployed and operated without these steps occurring. This process again is likely to consume the bulk if not all of the interim period before IMS is deployed.

ATIS correctly observed, “Providing for emergency service capabilities in SMS would require substantial reengineering of network systems—which could take as long as creating a new standard for non-voice emergency communications—and would require the design of such revised SMS functionality into new mobile devices.”¹² The just-released ATIS INES Report and Recommendations underscores yet again the extent to which SMS is unsuitable for emergency communications – even if implemented by creating a national SMS relay center, which would then not require changes in PSAP equipment and software:

¹² NOI Comments of ATIS at 7 (filed Feb. 28, 2011)

- “SMS is a store & forward technology and does not allow for real time communication
- SMS is a best effort service with no delivery or performance guarantees
- SMS platforms are not built for robust, reliable emergency communications and could result in delayed messages, lost messages, and out of sequence messages
- SMS to 9-1-1 messages should be less than 160 characters in length to eliminate the need for the message to be broken down into a sequence of independent messages
- SMS platforms are not capable of querying positioning servers for location
- SMS platforms can only route to a single location for a given short code
- No security, authentication, or non-repudiation of any SMS message is provided
- The originating network will not prevent any spam, SMS spoofing, or denial of service (DoS) attacks
- A national SMS relay platform does not exist today and must be developed and staffed
- A funding model must be created that allows for the creation, staffing and maintenance of the national platform
- Voice call from relay center to PSAP may be through 9-1-1 network or through ten-digit emergency lines
- SMS is not compatible with long-term 3GPP standards-based MMES Solution.”¹³

SMS-to-911 is a technological dead-end that lacks critical capabilities necessary for emergency communications.

B. IP Relay is an Already Deployed Text to 911 Solution for Persons with Hearing and Speech Disabilities that Does Not Require PSAP Modifications.

The NPRM largely ignores the fact that, with respect to persons with hearing and/or speech disabilities, the Commission already has in place a text-to-911 system – IP Relay services. Indeed, with the advent of 3G and 4G services, mobile handsets are beginning to support Video Relay Service (American Sign Language-based relay) to 911 as well. The ATIS

¹³ ATIS INES Report and Recommendations at 15-16 (filed Dec. 12, 2011).

INES Report and Recommendations concluded, “From a technical perspective, IP Relay is the best alternative for interim [text-based] emergency communications by the June 30th 2012 target timeframe.”¹⁴ As ATIS noted, “IP Relay is available nationwide today and widespread use should result in minimal impact to PSAPs.”¹⁵

In two orders adopted in 2008, the Commission required providers of IP Relay and VRS services to assign ten-digit local telephone numbers, to collect Registered Location, and to “transmit all 911 and E911 calls, as well as a call back number, the name of the relay provider, the CA’s identification number, and the caller’s Registered Location for each call, to the PSAP.”¹⁶ The Commission further required, “These calls must be routed through the use of ANI and, if necessary, pseudo-ANI, via the dedicated Wireline E911 Network,”¹⁷ *i.e.*, via the selective router.

These orders are significant because, for any hearing and/or speech impaired user with a handset capable of operating the IM client used by an IP Relay provider, that user already has a way to reach 911 that does not require the PSAP to install new equipment. Because the 911 call is passed through the relay center, the relay communications assistant translates the text into speech, and can thus speak with any PSAP operator. Likewise, the PSAP operator’s questions and directions can be communicated directly back to the IP Relay user in text. Furthermore, in

¹⁴ ATIS INES Report at 2.

¹⁵ *Id.*

¹⁶ *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities; E911 Requirements for IP-Enabled Service Providers*, 23 FCC Rcd. 11591, 11620 ¶82 (2008). *See also* 47 C.F.R. §64.605 (emergency call handling requirements for IP Relay and VRS); *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities; E911 Requirements for IP-Enabled Service Providers*, 24 FCC Rcd. 791 (2008).

¹⁷ 23 FCC Rcd. 11591, 11621.

the event that the call is dropped, the PSAP has a way to contact the relay operator, and the relay operator can contact the IP Relay user.

Use of IP Relay has another advantage as well – flexible and readily-augmentable communications assistant (*i.e.*, relay operator) capacity. IP Relay is a service operated by entities compensated by the interstate Telecommunications Relay Service Fund. These entities employ staff to provide relay service 24 x 7 for the total volume of both emergency and non-emergency calls anticipated to be placed. Pursuant to FCC rules, however, IP Relay providers must prioritize the handling of 911 calls over non-emergency calls, which means that 911 calls are answered before non-emergency calls.¹⁸ This means that, if there is a sudden surge of 911 calls to IP Relay, the IP Relay provider can divert up to 100% of its total capacity to answering 911 calls. No dedicated 911 answering facility could have the same level of emergency back-up relay capacity, because it would not be economically feasible to staff in such a manner.

It is not at all clear, if the Commission were to create a national SMS 911 relay center to perform a similar text to speech conversion for SMS for 911 calls, that such an entity would or could have such a large amount of back-up relay capacity available. Most likely, it would be staffed to the anticipated volume of 911 calls, which would not as easily accommodate surges of peak demand. This means that there would be less available 911 capacity in a national SMS relay center than would likely be available through the existing IP Relay providers.

The plain fact is that IP Relay *already exists*, and thus does not have to be created. This suggests that, with respect to non-voice access by individuals with hearing and/or speech disabilities, rather than to attempt to create an SMS-to-911 system that will work no better – and likely worse – than the existing TRS systems, the Commission should instead focus on ensuring

¹⁸ 47 C.F.R. § 64.605(a)(2)(ii)

that individuals with hearing and/or speech disabilities are adequately educated as to how to place a 911 call from a mobile phone using these relay services, and which mobile handsets are necessary to be able to use those services.

III. THE COMMISSION SHOULD NOT REQUIRE 911 PRIORITY ACCESS IN THE CONNECTION TO A CARRIER'S NETWORK.

T-Mobile agrees that it is critical for people to be able to reach 911 in an emergency. Unfortunately, the August 2011 East Coast Earthquake illustrates that many of the issues here are not those that priority access to the wireless carrier's network would address, even if it were possible to implement in the near-term, which it is not. Priority E911 for a mass market E911 service could not be architected in the same way as the Priority Access Service that is provided to the government.

When the August 2011 East Coast Earthquake struck, T-Mobile, like many other carriers, experienced an immediate surge in call attempts. In the worst areas, known call attempts exceeded typical volumes by five to seven times. There were also calls that were attempted, but of which T-Mobile has no record because the caller's handset was unable to establish a connection to the RAN.

For 911 calls, the surge did not last long – only approximately 15 minutes. Those calls that connected to T-Mobile's RAN were handled by T-Mobile's switches on a priority basis. A review of the DC area call handling provides valuable insights. Of the calls that successfully connected to T-Mobile's RAN, the vast majority were successfully routed to PSAPs – with the failures that did occur resulting from a lack of ESRKs.¹⁹ An overwhelming majority of the calls

¹⁹ An ESRK (Emergency Services Routing Key) is an identifying code, transmitted with the 911 call, which is used to facilitate selective routing to the PSAP and the ALI query from the PSAP back to the wireless carrier's MPC or GMLC. The number of ESRKs made available generally matches the 911 trunk capacity and, typically, both are specified by the ILEC

that were routed to the PSAPs, however, appear not to have been successfully handled by the PSAPs.²⁰ Overall, it appears that approximately 84% of the calls that reached T-Mobile's RAN and switches were then unable to be handled successfully by the public safety network.

What is clear from this experience is that unless PSAPs are willing to staff at greater levels, and thus to also have a greater number of ESRKs available to accommodate extreme peaks, increasing the number of 911 calls that gain admission to the wireless carrier's RAN will not increase the number of 911 calls that can be handled at the peak of the surge. For extreme surge events, there are going to be 911 calls that cannot be completed, irrespective of whether some kind of priority access were to be implemented.

In any event, it is not technically feasible to give 911 calls priority access to the wireless carriers' RAN. The radios in the actual cell towers are not designed to distinguish 911 from non-911 calls at the point of initial reception. To try to create that capability, if even possible, would require a massive retrofit of the existing wireless networks.

The most important step that could be taken to ensure that 911 calls can be handled during critical mass emergencies is to reduce demand. Press reports indicated that many calls to 911 were to ask questions such as "What just happened?" or "Did we have an earthquake?", or to report that the earthquake had occurred. While understandable, these are not proper uses of the 911 network, and consumed 911 answering capacity that might otherwise have been needed. Similarly, mass incidents result in a large number of calls being placed between family members and friends. It would be better if such contacts were made by text or email, rather than by wireless phone. The Commission and public safety could play a critical role in educating

and/or the PSAP. During an unusual surge of 911 calls, either 911 trunk blocking or ESRK exhaustion may be experienced.

²⁰ For these calls, T-Mobile received no ALI queries.

consumers how best to check on loved ones without tying up resources needed for emergency communications.

Extreme peaks can also be mitigated by implementing NG911. NG911 should facilitate wider sharing of call loads during extreme events, allowing PSAPs outside the immediate crisis area to help answer the flood of inbound 911 calls. Regional or even national NG911 networks could allow many more 911 calls to be answered during a major crisis. With a regulatory framework that brings all relevant stakeholders together with a common vision, standardization of technologies, development of a regional management structure for shared PSAP staffing capital investment, and a coordinated roll-out, a much more cost-efficient emergency call answering capability could be realized – one that would also have the inherent ability to absorb 911 call surges during major emergencies. Given the severely constrained budgets that cities, counties and states face, such a consolidated emergency services resource should be an objective of the NG911 program.

IV. CONCLUSION

The Commission should keep its focus on creating and managing a path towards long-term migration to NG911 in regions or states, and coordinating all stakeholders. Interim SMS-to-911 detracts from those efforts, and has no ready way to be implemented that does not require substantial changes to both carrier networks and PSAPs. Under these circumstances, the Commission should continue to promote the use of its 911-enabled TRS services – specifically IP Relay and VRS – for mobile emergency communications by individuals with hearing and/or speech disabilities, and should focus on achieving ubiquitous text-to-911 capabilities through a coordinated standards effort and taking advantage of the capabilities of IMS and advanced radio technologies.

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