

**David Simpson, Rear Admiral (Ret.)
Chief, Public Safety & Homeland Security Bureau
Federal Communications Commission**

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Introduction

Good afternoon and welcome to Washington!

I want to give a big thanks to Brian Fontes and NENA President Buster Brown for the warm welcome and for inviting me to address the 2014 session of 911 Goes to Washington.

It is always an honor to speak to a group that represents the men and women on the front lines of emergency response who provide 911 services to the American public.

The work they do every day is inspiring, and we are grateful for their daily commitment and service to the enduring value of protecting safety of life and property. On any given day, at any given hour, our nation's first responders must face each emergency with calm and courage. They work through challenges on every call, which most of us hope we never have to face in a lifetime. At the FCC, we know that whether an emergency is large or small, having effective and reliable communication tools tailored to functional 911 needs is as essential for 911 operators as a weapon might be for a police officer, a hose for a fireman, or a stethoscope for a paramedic.

As communications networks migrate to newer technologies and consumer habits change, we must make sure that Americans' access to critical lifesaving services, most notably 911 services, are preserved, and where possible, improved. This is an incredibly challenging task. It demands foresight and deliberate planning, but it is also an opportunity to be "responsibly creative" by developing and implementing a new future that is better than the one we are faced with now.

In this regard, the public safety community has been entrepreneurial in every sense of the word. Every day, your organizations are challenged to deliver a product consistently, expertly, and to the highest standard possible following well-established protocols. Yet every year, most of us are also challenged with doing more with less. To do that without having to sacrifice standards, you have often come up with out-of-the-box ways to address operational challenges. You have to dream of “what could be” so that responsible, constructive steps can be put in motion to realize a new and improved standard of service.

I recently met with call-takers in a local PSAP who described how they routinely use maps and street-view photo applications to help find 911 callers who are uncertain of their exact location, as well as to help first responders looking for the best entry path to a property. It sounds simple, but the ability to see the scene through the caller’s eyes has not been in place for long. Yet already many of you are asking, “What else can we do?” What if 911 callers could submit pictures to PSAPs, or if vehicle cameras could automatically send photos of accident scenes? For example, if there is clear evidence that a car has accelerated through three aerial rolls, airbags were deployed, and it is unclear whether passengers were wearing seatbelts, could we shave precious seconds off of dispatch by utilizing parallel information flow to dispatchable units and informing them that the protocol criteria has been met warranting dispatch of trucks? The potential to radically improve 911 response is great, but it will take aggressive, forward-looking professionals to establish goals and responsibly implement future capabilities.

Our job, in turn, is to facilitate the best technology tools to help you do your job more effectively. Today, I’m going to describe some of the issues affecting 911 that the Commission is actively engaged in. But I must tell you at the outset: the Commission cannot accomplish its goals without your continued and direct engagement. We need you to bring your creativity and commitment to the challenges that face us.

Together we must plan for the transition from legacy systems to the new world of communications in an Internet Protocol (IP) world. In that new world, we must make sure that core 911 functionalities are preserved, and we must adapt to a new array of advanced technologies and services that will bring both new opportunity and new challenges.

We are focused therefore on three key 911 priorities.

First, we are bringing additional accountability to the network that you rely on day to day and during disasters to help ensure standards for reliability and resiliency are achieved, standing ready to survive issues from severe environmental events or cyber attacks.

Second, we are focused on the impact of the IP transition on public safety. The nation's communications providers are rapidly embracing the advantages inherent in IP-based services and networks and are seeking to decommission their legacy switched networks. This will impact you directly. Therefore, we are focused on ensuring that state and local 911 systems are protected during this transition and that you also have the opportunity to transition your systems to Next Generation 911 (NG911). As the transition takes place, we also seek to ensure that citizens will have increased access to advanced emergency services, including sending texts to 911.

Third, advances in the underlying network will mean little if the call-takers that you represent cannot determine the location of a caller. We are focused, therefore, on preserving and enhancing the location information PSAPs receive to ensure that callers in all localities, including indoor environments, can be found quickly when in need.

I'll expand upon each of these issues and close with updates on multi-line telephone systems, non-service initialized devices, and cybersecurity, as we lay the groundwork for NG911.

Reliability of 911 Systems

This past December, the Commission adopted landmark rules to help ensure that phone calls to 911 will be delivered during disasters and other events that compromise communications

networks. The rules are designed to improve 911 reliability nationwide by requiring 911 service providers – generally, the wireline phone companies that route both wireline and wireless calls to 911 call centers – to take reasonable measures to provide reliable and resilient 911 service, holding them accountable through an annual certification.

Providers can comply with the new requirements by either implementing certain industry-backed best practices on which the rules adopted by the Commission are based, or by using alternative measures that are reasonably sufficient to ensure reliable 911 service.

The best practices cover three core areas: auditing 911 circuits for physical diversity, maintaining backup power at central offices that directly serve PSAPs, and maintaining reliable and resilient network monitoring systems. If needed, the Bureau may follow up with service providers to address deficiencies revealed by the certification process.

We also strengthened our existing outage reporting rules to ensure that 911 service providers provide 911 call centers with timely and useful notification of any applicable 911 network outages.

The new rules are designed to maximize flexibility for 911 service providers and account for differences in network architecture without sacrificing reliability. Accordingly, the rules require service providers to certify annually that they have implemented either industry-backed best practices or acceptable alternative measures.

IP Transition

Another critical focus of the Commission is easing the transition to an all-IP environment while ensuring that core values, including public safety, are protected and, where possible, improved. The nation's communications sector is rapidly transitioning from legacy technologies, and the public's calling patterns are shifting. Copper is being retired in favor of fiber optics.

Traditional cellular networks that once supported only voice communications are making way for wireless broadband networks that support voice, data, and video. The demand for resources in

order to take advantage of these platforms is growing exponentially, and 911 communications will increasingly be comingled with an ever-growing variety of packets.

Of course all of these changes are being driven by consumer demand. Americans will not remain tethered. We are moving from fixed wireline connectivity to wireless options. We want to enable our services and applications to be available everywhere. In 2012, nearly 40 percent of American households reported going wireless-only. VoIP and other broadband voice applications have replaced traditional phone services in many homes, offering cheaper connectivity and enhanced features that older legacy-based technologies cannot achieve.

These changes are heading us towards a tipping point, when the adoption of new communications technologies reaches a critical point that makes continued operation of legacy networks economically and technologically unsustainable. Network providers are planning for the day when they will discontinue offering legacy services. That means that like it or not, those of you in this room and your organizations must also plan for the “day after” legacy services are discontinued.

The enthusiasm for broadband is also a great national opportunity. It opens up new possibilities for services and systems. In fact, public safety is the first of the core statutory values entrusted to the Commission, which Chairman Wheeler refers to as part of our “Network Compact.” In January, the Commission adopted the Technology Transitions Order, which reaffirmed the principles of the Network Compact and the enduring value of public safety.

We need to understand how the transition to all-IP networks will affect consumer access to emergency services, and how it will impact PSAP day-to-day and disaster response operations. The Technology Transitions Order therefore calls for voluntary tests of real-world application, as well as targeted experiments and cooperative research. And very critical to our understanding of how this transition process will work, we seek to improve data collection and feedback.

The Order proposes a broad set of voluntary experiments that will examine the impact the migration from TDM to IP-based technologies will have on various types of end-users. For example, what will happen to the communications access of residents of older communities that have relied on the most basic copper facilities to support essential services?

Regardless of the transition technologies that service providers choose to test in trials, the Commission made clear that all experiments will be expected to support and protect core public safety functions, and we will evaluate the experiments on how effectively they do so.

Some of the core functions that must be sustained during an emergency include the ability of the public to reach emergency responders without interruption, assistance to law enforcement, and the protection of radio and wireless communications systems used by public safety.

Furthermore, we will require experiments to ensure that in the event of a public safety failure, the provider will be able to immediately restore legacy service, fix its IP-based service, or provide a comparable service.

I strongly encourage your active participation and input into these experiments so that we can better understand their impact on 911 service. Whether public safety entities initiate their own experiments or participate in experiments initiated by others – your participation is vital to the success of our transitions trial program.

These experiments offer an opportunity to make sure that public safety needs are part of the discussion from the get-go and are planned for, not tacked on as an afterthought after disaster has already struck.

They also offer an opportunity for you to put to the test your systems and equipment, learn from others, and develop use-cases that can help you justify the funding and resources for the parallel public safety transitions that need to occur. The IP transition is not an “if” prospect, but a “when” prospect. As such, you must be prepared for it.

One way to prepare is to plan and conduct exercises that “walk through” or simulate specific scenarios. Before joining the Commission, I worked for a fairly large organization that spends quite a bit of time conducting drills and exercises to test the limitations of operational design and protocol. I’m pleased, therefore, to tell you that the Bureau will be hosting a Public Safety IP Transition Workshop next month that will examine public safety scenarios that could occur in an all-IP environment. The workshop will take place on April 17 and 18th and will bring together PSAPs, first responders, wireless providers, network service providers, and other stakeholders to discuss public safety response and reaction in an all-IP, Next Generation 911 environment.

Specifically, we will challenge participants to consider use cases in an all-IP world that will impact day-to-day PSAP and first responder operations, disaster preparedness and response, and cybersecurity issues, which I will touch on a bit later. Participation in the workshop by NENA and its members will provide the Commission with substantive information on how the IP transition is likely to affect the nation’s 911 call-takers, and will help us identify ways to leverage the transition to provide advanced emergency communications services. Look for more detailed information about the workshop as the date gets closer.

Text-to-911

One of the benefits of Next Generation 911 is that it offers the promise of supporting a wider range of access to critical emergency services. The Commission has already taken steps towards realizing this promise in its text-to-911 proceeding.

Text messaging has undeniably become part of the fabric of everyday life. Hundreds of billions of text messages are now sent each year from both traditional SMS and other text messaging applications. While it may seem that teenagers are sending the bulk of those messages, text messaging has in fact become a key mode of communication across almost all demographics.

Even in this increasingly text-based world, we emphasize – and will continue to emphasize – that voice calling to 911 is the preferred option in most situations. Nevertheless, text-to-911 is an important complement where a voice call is not an option.

First, text-to-911 is vital for those with hearing and speech disabilities. For this segment of the population -- roughly 40 million Americans – text is often the best -- and sometimes the only -- means of calling for help.

Second, there are times when placing a voice call may put someone in danger, such as in an active shooter or domestic abuse situation.

Third, when voice networks are congested, text messages may be the best option of connecting with emergency services.

Another advantage of using text to communicate with 911 is that multiple text messages can be opened at the same time, enabling PSAPs to identify and prioritize life-threatening emergencies and to prevent “spoof” text messages from diverting valuable PSAP resources.

We have been working diligently with PSAPs, carriers, consumer groups, and other stakeholders to move the ball forward on text-to-911 deployments.

As many of you know, a growing number of PSAPs have implemented text-to-911. The states of Vermont and Maine, and numerous counties and cities in North Carolina, Pennsylvania, New York, Iowa, Maryland, Virginia, and Texas are in the vanguard.

In these locations, text-to-911 is making a difference in emergency response and is saving lives.

In Vermont, for example, a text message to 911 enabled emergency personnel to thwart an attempted suicide, and in another, a domestic abuse victim was able to contact 911 and have her abuser arrested.

Since last year, the Commission has taken great strides toward making text-to-911 service a reality throughout our nation. In May 2013, we issued an order requiring covered text providers to provide an automatic bounce-back message to consumers who send a text message to 911 in an area where text-to-911 service is unavailable. This bounce-back rule was a critical first step in the rollout of text-to-911, as it ensures that consumers will know to make a voice call to 911 rather than waiting and wondering whether a PSAP received their emergency text..

In January, the Commission took another important step towards nationwide implementation of text-to-911, adopting a Policy Statement and Second Further Notice of Proposed Rulemaking in the proceeding.

As many of you know, the four major wireless carriers, alongside APCO and NENA, signed an agreement in December 2012 in which they committed to making text-to-911 service available to requesting PSAPs by May 15 of this year. The Policy Statement states the Commission's belief that that every CMRS carrier and every provider that enables a consumer to send text messages using numbers from the North American Numbering Plan should support text-to-911 capabilities. To encourage this development, the Commission intends to pursue a technologically neutral approach that builds on consensus proposals from stakeholders in industry and the public safety community.

In addition to the Policy Statement, we sought further comment on a range of text-to-911 issues, including the implementation of text-to-911 service for over-the-top text messaging providers, the provision of location information with text messages to 911, roaming, and PSAP implementation. We will consider all of these issues in the near future, and we are optimistic that the parties to the carrier agreement will fulfill their commitments in May of this year.

The Commission's actions are only one part of the process; we also need your help to make text-to-911 a reality. We encourage PSAPs to take action to explore the ways in which they can implement this important service. Those PSAPs that have implemented text-to-911 offer a wealth

of experience and best practices for those of you that are still deciding what course to take. I encourage you to speak with them about how they have moved forward with this exciting service. Just recently, we added an FCC webpage focusing on PSAP best practices in implementing text-to-911. We welcome your continued input to that page and encourage you to visit it and learn from your fellow members.

We know that in the face of ever-shrinking budgets, many PSAPs are concerned about the potential costs of implementing text-to-911 and upgrading their systems to support full NG911. We also hear the concern about whether adding text-to-911 and NG911 applications will place new or overwhelming demands on 911 call-takers, who already face significant challenges day in and day out. These are valid concerns, but we can assure you that the Commission wants to work with you to address these concerns. Text-to-911 will save lives and may save dollars that would otherwise be spent on medical care. NG911 can provide call-takers with better information that will lead to more effective response. It can also lead to cost efficiencies and savings by leveraging widely available IP-based technologies and allowing networks to be built and maintained more flexibly and efficiently than legacy technology. So, even in this era of budget cuts, we can't afford to *not* move forward on this issue. The Bureau will continue to bring attention to state plans as part of the effort to ensure that 911 funds are used for their intended purpose. We need your help to make text-to-911 and NG911 a reality, and we encourage you to work alongside us.

Location Accuracy

Of course, advanced networks capable of supporting new services will be of little use if your call-takers cannot locate callers during the first critical moments of an emergency. That is why we are moving forward determinedly to improve location accuracy for the nation's 911 systems, and particularly to ensure that calls placed from indoor locations include dispatchable information.

Since the Commission adopted the first E911 location requirements in the mid-1990s, wireless usage and wireless technology have changed dramatically.

In comparison to a few years ago, there has been a significant increase in the number of Americans “cutting the cord” and relying exclusively on wireless phones for all of their voice communication needs – including making voice calls to 911. In California, for example, more than 70 percent of 911 calls are made from wireless phones.

Second, wireless calls are increasingly made from indoor environments. A 2011 study showed that an average of 56 percent of wireless calls were made from indoors, up from 40 percent in 2003. Indoor wireless usage is even higher for smartphone users – a 2013 report estimated that up to 80 percent of smartphone usage occurs inside buildings. The San Francisco Department of Emergency Management estimated earlier this year that 70 percent of all wireless 911 calls it handles originate indoors.

What effect are these trends having on 911 location accuracy? There is cause for concern. Since last summer, the Commission has received data from a number of jurisdictions suggesting that the delivery of Phase II location information for wireless calls has decreased in the past several years.

Let me give you an example a little closer to home. Two weeks ago, I had the good fortune to tour the Fairfax County PSAP, an outstanding, state-of-the-art facility that serves 1.3 million county residents. I spent time touring the 911 call-taking area and was duly impressed by the level of professionalism on display.

When I visited the Fairfax PSAP, I asked a simple question: If I dial 911 from *inside* the PSAP, what location information will the PSAP receive from my wireless carrier? To find the answer, I made a test call to 911 (after getting permission from the PSAP manager, of course!). When I made my call, the Phase II fix received by the call-taker indicated I was not in Fairfax but in

McLean. I then rebid and it showed that I was inside a Costco, some 200 – 300 meters across a major highway from the PSAP.

This is just a single anecdotal example, but when we look at the full record, we see that there is significant room for improvement in wireless location accuracy, particularly for indoor calls. This is not to place blame on the wireless carriers – they have invested a great deal in E911 location and there have been areas of improvement. Moreover, the Commission itself bears some responsibility because, as many of you know, the Commission’s current wireless location accuracy rules focus on outdoor accuracy and do not include requirements focused on indoor location.

But the bottom line is clear: for all our achievements, we all have a lot more work to do to ensure that PSAPs receive the kind of timely, reliable, and dispatchable location information that they need and that the public expects.

The Commission has made action on this issue a priority. Our November 2013 location accuracy workshop brought together public safety officials, wireless carriers, and location technology vendors to discuss to improve location accuracy. The workshop identified important issues facing both public safety and wireless carriers, and initiated a constructive and ongoing dialogue about how all stakeholders can work together to improve E911 Phase II performance. For example, the workshop highlighted that automatic rebidding by PSAPs could yield some improvements in the quality of location information. The workshop also highlighted improvements to existing location technologies and new technological approaches that may improve location determination, even in difficult indoor environments.

Building on the November workshop and the diligent and continued efforts of CSRIC, in February, the Commission adopted a Third Further Notice of Proposed Rulemaking that proposed specific enhancements to the existing Phase II rules. In this Further Notice, we propose a number of near-term benchmarks for indoor location accuracy. Specifically, we propose that within two years

of rules being adopted, CMRS providers should be able to locate 80 percent of indoor wireless 911 callers within 50 meters on the horizontal plane, and that within three years, they should also be able to provide vertical location within 3 meters. We propose to use a test-bed process as a means of showing compliance with indoor location requirements, which would enable indoor testing in representative environments without requiring private building access.

We also seek comment on longer-term location accuracy goals and how they would fit into an all-IP Next Generation 911 environment. We seek comment on how to leverage the fast-improving technology being used in commercial location-based services to locate 911 callers. Today, smartphone applications can locate users within inches of their location, and we believe that 911 should be able to harness this power to serve public safety. We urge you and others in the PSAP community to examine these proposals carefully and to provide us with your comments and ideas.

Multi-line Telephone Systems

Indoor location is not just a wireless issue. All across this country, in office buildings, schools, manufacturing plants, university campuses, and hotels and motels, there are literally tens of thousands of telephone systems, collectively called multi-line telephone systems (MLTS), that too often are not providing critical indoor location information.

You will be hearing more about MLTS later today from the FCC's Commissioner Pai, who has taken a deep personal interest in the issue after two tragic events in which callers trying to dial 911 from MLTS systems did not receive help in time, in one case because the caller could not directly dial 911 and in the other case because the MLTS system provided a location that was miles from the caller's actual location. In addition, I know that NENA has proposed that Congress enact federal legislation to address these issues.

For now, let me just say that I share Commissioner Pai's and NENA's concern about MLTS. Regardless of whether Congress passes legislation, we at the Commission will work with NENA and key stakeholders to find solutions that will ensure that where MLTS is installed, it can provide direct access and critical location information to PSAPs.

Non-service Initialized Phones

Let me also mention the latest developments to achieve our goal of eliminating harassing calls to 911 from non-service initialized (NSI) phones.

As you know, since the mid-1990s, the Commission has required that NSI phones be capable of reaching 911. At the time, this measure was supported by NENA and the 911 community at large, and it has provided significant public safety benefits over the years. Increasingly, however, PSAPs have been plagued by harassing, non-emergency calls placed by callers using NSI phones, who often know full well that the PSAP cannot identify the caller. These calls divert precious time and resources away from the PSAP being able to respond to real emergencies.

In 2008, the Commission issued a Notice of Inquiry on NSI phones, in response to petitions from NENA and others. In light of the concerns raised at the time, we sought comment on whether the Commission should eliminate the 911 call delivery requirement for NSI phones. Some public safety commenters supported this, but others argued that the requirement should remain in place and that we should focus on other ways to identify and block harassing 911 calls from NSI phones.

More recently, NENA, APCO, and many others in the public safety community have come to conclude that the original NSI phone rule may be doing more harm than good, suggesting that other programs for low-income and at-risk individuals have eliminated the need for NSI phones to continue to support 911 calls. Last year we issued a Public Notice on this topic, and the Bureau is working to identify the best way to deal with this important issue. We hope to work with NENA on

this issue, and we remain committed to helping the 911 community find effective solutions to harassing calls.

Cybersecurity

Lastly, I'd like to discuss cybersecurity and how it relates to 911. As I mentioned earlier, in the world of rapidly developing technology and the ongoing transition to "EoIP," or "Everything over Internet Protocol," threats to the communications capabilities of America's networks continue to grow, as does our utilization of the Internet Protocol for new functions. 911 networks are not immune from these threats, and they will face increasing cyber challenges as PSAPs migrate to the IP-based infrastructure that will support NG911. What used to be a set of failure modalities associated with legacy-switch telephony were limited to a region, but in the future, 911 networks could be put at risk from a cyber attack from halfway around the world.

The first priority of the FCC – indeed, a primary reason for the creation of the FCC – remains to ensure that the Nation's core communications infrastructure is secure and reliable. Cybersecurity presents some distinct challenges above and beyond our traditional security role for communications. First, the incredibly fast pace of development (both good and bad); second, the fact that critical IP-based broadband infrastructure underpins not only the communications sector but information services for many other major sectors; and third, the scale and potentially far-reaching consequences of even one cyber incident impacting interdependent systems. 911 networks will certainly not be immune. Some of you have already experienced denial-of-service attacks, spoofing, and other cyber events that have the potential to prevent a PSAP from being able to receive and respond to emergency calls. Malicious activity negatively impacting operations in other sectors will certainly trend towards public safety communications if we don't aggressively take on a higher standard for cyber-readiness.

As NG911 functionalities are realized, the Commission remains committed to preserving the reliability of vital public safety communications networks. We are working now with the telecommunications sector to establish a recognizable and reputable way to evaluate cyber risk inside corporations, with business partners and consumers. I encourage PSAPs to do the same. The recently published cybersecurity framework from NIST will enrich the FCC's work with telecommunications companies by establishing a clear view of risks and how we can mitigate them. I encourage PSAPs and the rest of the public safety community to similarly adopt the cybersecurity framework as a straightforward way to assess your risk posture and then communicate risk expectations with both your carriers and vendors.

By working with public and private sector partners, and continuing to facilitate the development of cybersecurity best practices, real-time cyber threat information sharing and awareness, early involvement in hardware and software development, and coordination in international cybersecurity policies, the Commission will continue to wield its influence to improve and secure the nation's public safety communications. Like with our other Next Generation 911 initiatives, we need your help to meet this challenge. As we move forward together toward the IP and NG911 transitions, we encourage you to seek out cost-effective ways to protect your PSAP from cyber events and educate your personnel on how to both prevent and respond to such events.

Conclusion

Our work at the Commission and the Bureau is first and foremost to ensure that you have emergency communications systems that perform under the worst conditions, that incorporate all of the advantages that new technologies have to offer, and that enable you – the nation's first responders – to continue to provide emergency response at the extraordinary caliber you exhibit today.

In closing, I would like to again thank you for the opportunity to speak to you today. If you take one thing away from this discussion I hope it would be a renewed fire in the belly to get involved, motivate your colleagues, and make sure that we hear your voices. The commercial sector and American public are embracing the next generation of communications technologies, and so must the public safety sector. We can help you do this, and you can help us help you. We look forward to the collaboration.

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