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**before the
SENATE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION
regarding
IMPLEMENTATION OF E-911 SERVICE**

October 16, 2001

Thank you for the opportunity to appear before you today. I am Thomas E. Wheeler, President and CEO of the Cellular Telecommunications & Internet Association (CTIA) representing all categories of commercial wireless telecommunications carriers, including cellular and personal communications services (PCS).

Thank you for inviting me here today to talk about this critical issue for the wireless industry, for consumers, and for the nation. Wireless carriers have long recognized the importance of providing 911 service to the public. Wireless phones help ensure public safety on highways, in cities, towns, workplaces and neighborhoods. Every day, in the United States there are more than 120 million wireless users making more than 140,000 calls for help or to report an emergency.

The challenges to implementing E911 have proven daunting. But, the basic reality is that under Federal Communications Commission (FCC) guidelines adopted just two weeks ago carriers will deploy E911 pursuant to specific implementation timetables. My testimony reviews the history of the E911 issue, revealing the difficulties inherent when regulatory standards precede the technology necessary to meet a standard. But, the task at hand is clear – implementing E911. There are several aspects to the task, but they fit into a few categories.

First, how carriers and the public safety community – the PSAPs – will work together, and I emphasize together, to deploy E911 technology. Today, there are some basic problems. For example, a comprehensive survey does not exist that identifies which PSAPs cover what areas and their specific deployment plans, including whether they are Phase I compliant. This can and should be remedied. Other practical tools to roll out E911 technology would greatly assist the effort – model PSAP-carrier agreements, statewide implementation plans, and testing protocols are just some examples. This Committee has already directed the FCC to assist such planning, it did so when passing the Wireless Communications and Public Safety Act of 1999. Action is needed. Cooperation with PSAPs must also involve local wireline carriers – who must upgrade their networks to handle the additional requirements of delivering wireless location information to PSAPs.

Another challenge for PSAPs is finding the financing to support technology upgrades. Sadly, while wireless subscribers contribute more than \$700 million annually to support wireless E911 services, some States have “raided” their E911 coffers to cover budget shortfalls. California alone redirected \$50 million of \$70 million earmarked for wireless emergency services to its General Fund in July.

Second, another set of challenges involves how carriers and the public safety community will work on other potential requirements or mandates. For example, the National Communications System has recommended a Priority Access requirement for the wireless industry. The wireless industry is already working on that task – complying with requests to give Priority Access to five hundred essential personnel within sixty days. But, if, as some have suggested, Priority Access is to be given to significantly more personnel, we could face a circumstance where Priority Access calls might actually prevent 9-1-1 calls from going through. Mandated “cell broadcast” systems, in which wireless phones

in a given area receive a message, also present the possibility that scarce wireless spectrum resources are shifted away from 9-1-1 calls. Cell-siting issues will also have to be addressed. All these point to the problem that this Committee knows well – wireless spectrum is in extremely short supply, and the artificial caps on spectrum ownership exacerbate the problem. More demands on the wireless network require more spectrum, it is just that simple.

Third, spectrum shortfalls are also a problem for the public safety community. Despite Congressional direction, 24 megahertz in the 700 MHz band destined for public safety uses remains in regulatory limbo. Public safety personnel are in dire need for additional spectrum, interoperability of public safety communications is key and resolving the questions around the 700 MHz band is more important than ever.

Background

In 1996, the Federal Communications Commission adopted rules for enhanced wireless 911 service. Under Phase I of its plan, carriers were required to transmit the handset's phone number and the location of the cell site serving the caller to the public safety answering point (PSAP). Phase II E911 requires wireless carriers to provide to the PSAP more precise location information (latitude and longitude) and callback capability.

Although the Commission acknowledged that the technology required to locate wireless callers to emergency services did not exist in 1996 – indeed, was not even under development – it nevertheless set an extremely aggressive five-year schedule to begin implementation of Phase II of its E911 plan. This implementation was to be completed by December 2005. Despite breathtaking

estimates of the costs to deploy Phase II technology (\$7.5 billion), wireless carriers immediately began the process of identifying vendors and analyzing the most efficient and effective means of meeting the Commission's deadline.

Not surprisingly, given the aspirational nature of these requirements, there have been delays in satisfying the Commission's first Phase II benchmark. These delays have resulted from a confluence of many factors. First and foremost, the technology required to find callers within the Commission's parameters was never under the carrier's control and is only now becoming available. Wireless carriers in the United States will soon be Phase II capable. Two carriers representing almost 40% of wireless subscribers have committed to the deployment of technology covering all subscribers, not just new phones in 2002. It is notable that no other nation in the world has successfully developed and deployed the technology to pin-point a caller's location from a wireless device. Second, although PSAPs and the wireless industry share responsibility for the delivery of nationwide E911 deployment, the public safety community must also work to upgrade PSAP facilities to handle the E911 information sent by carriers. Finally, the Commission's E911 regulations have undergone constant revisions since 1996, making it difficult for both the public safety and wireless communities to implement the daunting E911 requirements.

I. TECHNOLOGY CONCERNS

When the Commission issued its first E911 order in 1996, it expected that Phase II requirements would be implemented through a "network overlay" solution. This solution permits callers to be located through triangulation of nearby cell sites (calculating distance by the time consumed for cell

site-to-handset signal transmissions). Under the FCC's rules, a carrier using a network overlay must provide a level of accuracy within 100 meters 67 percent of the time.

After manufacturers and carriers had analyzed the network overlay technology under development, some vendors proposed use of an alternative "handset" solution that promised greater accuracy. This solution often includes a Global Positioning Satellite (GPS) receiver, with triangulation performed using the satellite data in conjunction with data derived from the wireless network. Other carriers later proposed a hybrid solution, which uses both network and handset upgrades. In 1999, the Commission revised its rules to permit use of handset solutions, but imposed more rigorous accuracy requirements on users of this alternative – carriers must provide a level of accuracy within 50 meters 67 percent of the time and within 150 meters 95 percent of the time.

There are inherent technical challenges in both the network overlay and handset solutions. In most general terms, the network/triangulation approach does not work well in rural areas where there are fewer cell sites; the GPS approach does not work well in buildings and urban areas where the satellite signal may be blocked. In addition, the overlay solution requires the installation of additional antennas at most cell sites, which even in temporary testing scenarios generated considerable landlord and community opposition. GPS-assisted handsets still have not been manufactured in a quantity sufficient for retail use.

Wireless carriers have not been passive or nay-sayers in this process. Every credible (and some not so credible) solution has been analyzed and field tested numerous times in joint carrier/vendor endeavors. Carriers have spent millions of dollars and thousands of hours in their search for the right technology. These real-world tests demonstrated, however, that until recently there was *no* Phase II

solution able to meet the Commission's accuracy requirements and that *no* location technology has been able to perform well across all environments. Even if the location technology could live up the claims of its salesmen, moreover, carriers have found that when they place orders, the equipment has not arrived on schedule and the network infrastructure upgrades bog down almost as soon as they are started. Only now are technically feasible, *complete* solutions starting to become available. Wireless carriers are poised to take advantage of this very new technology and there is no doubt that U.S. consumers will be the first on earth to reap the benefits of Phase II E911 service.

II. WHAT IS NEEDED TO MAKE E-911 DEPLOYMENT A REALITY

Our experience in deploying Phase I E911 (call-back information) has demonstrated that three parties are essential to a successful resolution of the challenge of implementing Phase II: the wireless industry, the FCC, and the PSAPs. When the first wireless customer receives a location-enabled wireless phone, and when wireless carriers deploy handset and network-based solutions, the public is going to expect Phase II E911 features and service wherever they roam because, to state the obvious, a wireless phone is a *mobile* device.

While Congress wisely recognized the benefits of statewide implementation in the Wireless Communications and Public Safety Act of 1999 – and specifically instructed the FCC to facilitate the development of such plans – the Commission has done little to further the intent of Congress in those states that do not already have a comprehensive plan for E911 deployment.

With recent world events, an increasing reliance on wireless communication, and the public's expectation that dialing 9-1-1 from their mobile phone will deliver an effective and timely response, it is

incumbent upon all States and their Governors to advance the Wireless E-911 process within their jurisdictions. Statewide procedures, standards and expectations for public and private sector cooperation should be developed. Updating and joining existing PSAPs with modern state-of-the-art technology will require an enormous coordinated federal-state partnership. Four steps that will lead to more timely E-911 deployment readiness are as follows:

Survey and Inventory all PSAPs. Today, after years of preparations for 911 and E-911 deployment, no one knows for sure how many PSAPs are in existence and their specific service areas. The wireless industry has identified in excess of 6,800 PSAPs in the United States. The National Emergency Number Association (NENA) has confirmed 5,000 primary 911 Centers and 2,300 secondary 911 centers, but this does not include the multiple police and fire departments which field emergency calls every day. Nobody knows with precise accuracy exactly how many PSAPs there are, what geographic area they serve, or their operational status. Available data indicate less than a third of PSAPs have implemented Phase I. While there are one or two markets that are imminent to launch Phase II, none have done so to date. A survey and inventory of PSAPs should include: name of facility, geographic area and boundaries they serve, name and contact number of a responsible party at the facility, Phase I & II implementation status, and expected actions necessary to ready PSAPs for Phase I and Phase II deployment. It is important to do a survey and assessment to determine if PSAPs are E-911 Phase I, Phase II, or not ready at all.

Establish statewide implementation plans. Creating a model PSAP-carrier agreement could be the first priority for every state. Within any given State, there are significant inconsistencies

from PSAP to PSAP and they are at varying levels of readiness and effectiveness. Public and private sector entities would benefit from common contractual understandings. These varying levels significantly impact a PSAP and/or wireless carriers' ability to implement Phase I and Phase II. States should work towards harmonizing PSAP readiness within their borders.

Equally problematic in Phase II implementation is the lack of a standardized (or at least agreed-to) methodology to interconnect and process latitude/longitude information generated by the wireless carrier and translate it into a specific dispatch address. Even though a wireless carrier might have a standardized way in which it handles information throughout its network, a local PSAPs may not receive or handle the information the same way. This was a serious problem when only about 1,000 PSAPs requested Phase I capability; imagine what it will be like when 6,800 PSAPs decide they want Phase II.

National guidelines may be beneficial to create uniform principles that would facilitate deployment and promote PSAP interoperability across State borders. There are already a number of States that have demonstrated significant success in implementing Phase I in the vast majority of their PSAPs. These States share many common hurdles and common solutions which could help states that are not as far along in this process. The elements common to statewide solutions are:

- A **central planning body** within the State that manages financial, as well as implementation processes.
- **Technology neutrality** – a must for operational, technical and financial solutions.
- **Cost recovery** (funding mechanism) for both the carriers and the PSAPs should be in place.

Each State should create a State E-911 Task Force comprised of representation from the public/private sectors, PSAPs, wireline and wireless carriers, to complete the survey, establish the

requirements and develop the program for how 911 and enhanced (E) 911 will be delivered within the State. Centralized planning within each State, an established appropriate funding mechanism and appointing a State Director/Administrator of statewide 911 systems are the key factors that have contributed to early State successes. A State Director/Administrator can do further assessment planning and build it into current deployment schedules. Statewide planning will most likely enable redundancy and interoperability among existing PSAPs to give a higher level of service in these times. Setting aside local concerns and giving guidance at the State level is necessary to achieve success.

To get a grasp of the size of the task at hand, consider the following: there are over 6,800 PSAPs and 5 to 9 wireless carriers per PSAP area. This means that more than 34,000 contracts and agreements will need to be negotiated and finalized. A Statewide Director/Administrator negotiating on behalf of all the States' PSAPs could dramatically minimize the number of contracts per State or Region and significantly speed up the process.

This mirrors the congressional direction included in S. 800, the Wireless Communications and Public Safety Act of 1999, to implement a statewide plan for comprehensive deployment for E-911 amongst the public safety community.

Test first, then roll out. State identification of at least a test location for the initial implementation, possibly a market that has a large number of carriers, offers important practical advantages to all sides. There are 104,000 wireless cell sites throughout the country. Deployment will require the loading or modification of software, hardware and possibly additional equipment. Rolling out these technical modifications in an ordered fashion is the most sensible approach—hopscotching among the 104,000

wireless cell sites spread throughout the nation will be inefficient and ultimately ineffective.

Programmatic, rational deployment will not only serve the citizens well, but will assist the wireless carriers that have significant technical issues to resolve. Enabling the service through a test market approach will identify roadblocks that can be eliminated before rolling out the service statewide.

The enormity of the task has been identified; establishing a rational roll out schedule for deployment and maintaining the schedule will facilitate a wider area and more people receiving the capabilities of the service in the timeliest fashion.

III. PUBLIC SAFETY COMMUNITY LACKS STATE FUNDING COMMITMENT

There is no doubt that the nation's PSAPs face incredible challenges in their daily support and delivery of life-saving services. One of these challenges is financial. Although wireless subscribers contribute approximately \$700 million a year to support wireless E911 service, this money is not always provided to the PSAP serving the subscriber's home market. For example, as the New York Times recently reported, because New York City and Long Island operate their own emergency 911 systems, they do not share in the over \$40 million raised by the state through consumer surcharges.

Worse still, some states have "raided" their E911 coffers to cover budget deficits. In California, for instance, more than \$50 million dollars earmarked for PSAP implementation of E911 was diverted this year to close gaps in the state budget. North Carolina similarly decided to spend millions of E911 dollars on other, unrelated matters. Consumers' ability to benefit from emergency location information would be greatly enhanced if PSAPs had access to, and could prioritize the use of, the hundreds of millions of dollars being collected from wireless consumers.

IV. IMPLEMENTATION GUIDANCE HAS CHANGED

While we must all move forward, we believe it is important to understand that since the FCC first adopted its E911 rules, the implementation process has been a moving target. Over the past few years, the Commission adopted then eliminated the cost recovery requirement for wireless carriers, modified the rules on cost allocation, imposed a signal scanning requirement on analog phones, and increased the location accuracy requirements for Phase II service. The Commission is currently considering -- for the second time -- whether to require call back capability for a wireless phone not assigned to a subscriber.

Cost Recovery. In 1996, the Commission stated that a wireless carrier's obligation to implement E911 service was contingent upon the adoption by each state of a cost recovery mechanism. The Commission was aware that the costs of deploying Phase I and Phase II E911 service were going to be enormous, and it wanted to ensure that recovery proceeded in the most efficient and effective manner possible.

Nonetheless, three years after it adopted this policy, the Commission repealed it for wireless carriers. Its action eliminated the states' incentives to adopt or retain cost recovery mechanisms, leaving wireless carriers in many areas to recover their implementation costs in whatever manner they could. As a result, negotiations between PSAPs and carriers, which previously had been focused on facilities deployment, foundered over questions of cost allocation.

Cost Responsibility. Although the Commission abandoned its cost recovery rules in 1999, it continued to emphasize that PSAPs must pay for all the upgrades and facilities required to receive and

utilize the data elements associated with Phase I service. Recently, however, the FCC revisited this issue, and shifted the responsibility for paying for certain network and database components from the PSAPs to the wireless carriers. This decision has created much concern among wireless carriers because they do not control the parts of the E911 network for which they are now responsible, and hence they cannot determine the number of trunks needed by, or influence equipment choices of, the PSAP.

Other challenges evolve from the fact that E911 technology involves not only wireless carriers and PSAPs, but local wireline carriers. For example, some technology challenges involving the Automatic Location Information (ALI) database are the result of the interconnection among PSAP, ALI database and carrier. For wireline E-911 applications, it is a one-time inquiry – PSAP checks ALI database and gets the caller’s address at the initiation of the call. But, in the TIA standards-setting process, the wireless industry and PSAPs had to determine solutions that went beyond this capability – to get continuous inquiry into a wireless caller’s location, not just a one-time inquiry at the start of the call. This is necessitated by the mobile nature of wireless communications. This “continuous-inquiry” functionality, requested by PSAPs, supported by the wireless industry, requires upgrades to the local wireline carriers interface with the ALI database.

Accuracy Standards. The FCC sometimes at vendor requests has changed the location accuracy requirements so that the standard upon which the PSAPs and the wireless industry agreed was never a stable platform for technological development. Although the Commission said that it did not want its rules to hamper the development and deployment of the best and most efficient technologies

and systems, and that its goal was to encourage the broadest possible range of technical solutions to be employed to achieve Phase II compliance, in late 1999, the Commission adopted Phase II accuracy requirements that differed based on the location technology selected by the carrier. These new rules imposed higher accuracy levels on handset-based technologies than on network-overlay solutions for E911 service.

This approach resulted in a flurry of requests for waiver of the handset accuracy requirements from carriers that believe that handset or hybrid technologies provide the best solution for their customers.

Non-Initialized Phones. In 1997, the Commission reversed its initial ruling and required wireless carriers to pass all 911 calls to PSAPs, even from handsets that are not registered for service with any wireless provider (“non-initialized phones”). At the time, the Commission acknowledged that call back capability might not be available for these handsets because they have not been assigned a dialable number. In May 2000, the Commission asked parties to comment again on the call-back issue. In response, virtually every wireless carrier explained that there is no viable technical way to provide call back service for non-initialized handsets. CTIA noted that mandating call back capability for all non-initialized phones would require the development of “parallel call delivery systems,” *the costs for which would exceed those for Phase I and Phase II implementation combined.*

Despite the overwhelming record evidence and the FCC’s own 2000 conclusion, in May 2001 the Commission asked whether carriers or manufacturers must develop the capability to enable PSAPs to return calls from non-initialized phones. If the Commission were to adopt such a rule, this would obviously divert carrier resources from Phase I and Phase II implementation.

The constantly changing technical and regulatory landscape has delayed implementation of E911 service. Carriers and public safety officials cannot complete negotiations over the deployment of E911 systems as long as regulatory obligations and technical requirements are in flux. The uncertainty created by the lack of firm rules has deterred all parties from making the huge financial and time commitments necessary to bring E911 service to the nation.

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The wireless industry is proud of its role in promoting public safety. While widespread E911 deployment is a priority for wireless carriers, the industry's efforts have been impeded by underachieving but highly touted location technology, evolving technological and regulatory requirements, and a lack of public safety readiness. I firmly believe, however, that the process of bringing the benefits of E911 to the public have been hastened by the certainty the Commission created two weeks ago when it approved some of the larger wireless carriers' E911 implementation plans. Much still needs to be done by all parties to this effort – the FCC, the wireless industry, the technology suppliers, and the PSAPs – but for the first time since 1996, it appears that our common goals are achievable.