Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
Revision of the Commission's Rules	)	CC Docket No. 94-102
Ensure Compatibility with	)	
Enhanced 911 Emergency Calling	)	
Systems	)	

GTE'S COMMENTS

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SUMMARY

GTE supports the Commission's decision to examine the compatibility of PBXs and wireless systems with enhanced 911 services. Providing 911 access to emergency service personnel is perhaps the most important service common carriers provide to the public. GTE urges the Commission to develop realistic performance standards for enhanced 911 services.

While it is important for enhanced 911 features to be delivered by all carriers -- including wireless -- it is also important that the Commission first examine the technical and cost issues associated with any proposal to extend enhanced 911 features to users of wireless systems.

GTE supports the Commission's decision to avoid adopting specific technical standards and solutions as a means of promoting enhanced wireless 911 compatibility. GTE believes that the Commission should apply any enhanced 911 performance standards to all CMRS providers, including wide-area SMR providers. Due to technical or operational limitations, exceptions to this rule should be carved out for one-way paging and air-ground services.

Delivery of ANI information to PSAPs in a wireless environment presents certain difficulties. Ten-digit ANI must be transmitted to the PSAP to accommodate roamers. Most cellular switches would be capable of supporting 10-digit ANI within three to six months if appropriate hardware and software upgrades are performed. Many PSAPs would also need to be upgraded in order to be capable of reading 10-digit ANI. The Commission should carefully consider the cost of such upgrades prior to adopting an ANI performance

requirement. The cost of compliance for wireless providers would be minimized if carriers are allowed to continue to route 911 calls and any attendant information through LEC tandem switches.

GTE supports the Commission's proposal to require, within one year of an order, that users of wireless service be able to reach emergency services from any service initialized mobile radio handset by calling 911. This capability, however, would be limited by the availability of 911 service in the geographic area, and to the extent of the wireless network build-out.

While GTE agrees that the Commission and the industry should strive to implement some form of call priority, implementation does not appear feasible in one year. Call priority is not possible in today's cellular networks because calls are not queued at the switch. Technology that would enable some form of call priority may be developed in the future. Equipment manufacturers and software developers are better able to tell the Commission when call priority will be possible.

The Commission should limit any ALI performance standards to a requirement that existing technology will allow the industry to meet in the specified time. Such standards should not require the carrier to guaranty accuracy, but rather should require delivery of the "best information available." No standard should be adopted before cost issues are considered. Also, because it does not appear that any company is close to developing a cost-effective altitude location system, any Commission ALI standard adopted in the upcoming order should focus entirely on two-dimensions. In lieu of a stage three

requirement, the Commission should require the industry to work with vendors towards developing systems capable of providing better location information.

Re-ring/call back will be capable on wireless service networks if wireless switches and PSAPs are upgraded so that 10-digit ANI can be transmitted and received. GTE suggests that the Commission consider a method by which all 911 providers would maintain a list of roamer access numbers in order to enable PSAPs to call back roamers through the local wireless network rather than through the roamer's home switch. Wireless networks are not capable of holding the connection between the PSAP and the caller in order to permit direct call back in the same manner as wireline networks.

The Commission should not specify a particular common channel signaling method that must be deployed by wireless networks. GTE urges the Commission not to adopt a common channel signaling implementation requirement at this time. The Commission should allow industry standards groups to continue to address implementation issues, but require such groups to make periodic reports to the FCC.

GTE supports the Commission's proposal to require wireless compatibility with text telephone devices for the purposes of placing 911 calls. GTE opposes, however, any requirement that would implement enhanced 911 capabilities by means of a mobile unit retrofit. Handset-based solutions would be costly and would place existing networks and their customers at a disadvantage as compared with new networks. GTE would not be opposed to individual

manufacturers or providers offering special 911 service enhancements that require handset upgrades to customers willing to pay for such services.

GTE supports preemption of inconsistent state 911 compatibility requirements. Preemption is necessary to ensure a uniform nationwide 911 system. Preemption is justified in order to prevent state regulations from thwarting the federal policy.

GTE urges the Commission, prior to adopting any compatibility standards for wireless 911 service, to carefully consider the costs of compliance with the standards.

GTE supports the goal of making PBX systems fully compatible with 911 systems. Because of the number of different systems currently in use, however, the Commission must adopt a balanced, flexible approach in addressing this issue. Wireless PBX manufacturers should be allowed sufficient time to develop the technology needed to make their service competitive with wireline manufacturers before full-blown 911 compatibility requirements are imposed on them. Similarly, flexibility should be afforded PBX owners with less than 15 stations by allowing, for example, labels at each station giving location instructions. Subject to its recommended revisions, GTE also supports the proposed rules designed to coordinate the transmission of information from PBX owners to LECs. Finally, with the introduction of interchangeable NPAs to alleviate number exhaust, GTE supports the careful use of NANP numbers to identify PBX calling stations.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20054

In the Matter of	)	
	)	
Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems	)	CC Docket No. 94-102

GTE'S COMMENTS

GTE Service Corporation ("GTE") on behalf of its telephone and wireless companies hereby submits its comments in response to the Federal Communications Commission's ("FCC" or "Commission") Notice of Proposed Rulemaking ("NPRM" or "Notice") in the above-captioned proceeding.[1] In the Notice, the Commission proposes to amend its rules to address issues raised concerning the provision of enhanced 911 services. In particular, the Commission proposes to adopt technical performance requirements that would ensure the compatibility of wireless services and private branch exchanges ("PBXs") with enhanced 911 emergency services.

I. BACKGROUND AND INTRODUCTION

In the NPRM, the Commission notes that since its inception in 1965, the use and availability of 911 emergency service has become widespread. In its basic form, 911 service forwards calls to a local telephone company ("LEC") switch which transmits the calls to a public safety answering point ("PSAP").

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[1] Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, *Notice of Proposed Rulemaking*, CC Docket NO. 94-102, RM-8143, FCC 94-237 (released October 19, 1994).

Most emergency systems have implemented enhancements to basic 911 service. Enhanced systems provide the PSAP with information to improve the ability of emergency personnel to respond to the call. Such information includes: Automatic Number Identification ("ANI"), which identifies the caller by phone number and is used both to call the party back in the event the call is disconnected and to access a database containing additional information about the caller; Automatic Location Identification ("ALI"), which, in the wireline context, provides the PSAP access to a database containing the calling party's address, and which permits selective routing ("SR") of the call to the appropriate PSAP; and other information such as the subscriber name and class of telephone service.[2]

In the NPRM, the Commission finds that most PBXs and wireless systems are not currently compatible with enhanced 911 emergency services. In particular, the Commission notes that PBX systems may present location identification problems for emergency services personnel. Likewise, the Commission states that wireless communications systems are not currently capable of providing precise caller location or other enhanced 911 service features.[3]

The Commission proposes to adopt performance standards for 911 calls placed through PBXs and over wireless networks. The standards proposed are

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[2] *Id.* at pages 4-5.

[3] *Id.* at 5-7.

designed to make PBXs and wireless networks compatible with enhanced 911 services.

GTE supports the Commission's decision to examine the compatibility of PBXs and wireless systems with enhanced 911 services. Providing 911 access to emergency service personnel is perhaps the most important service common carriers provide to the public. GTE urges the Commission to develop realistic performance standards for enhanced 911 services.

II. COMPATIBILITY OF WIRELESS SERVICES

A. INTRODUCTION

As the Commission notes in the NPRM, wireless telephony has become an increasingly important medium for persons making 911 emergency calls.[4] As wireless services continue to grow, so will the public's reliance on wireless communications for 911 services. GTE believes that wireless service providers have played an important role in the provision of 911 emergency services and will continue to be leaders in the advancement of public safety.

Wireless communications are particularly suited for use in many types of emergency situations. Although wireless networks may not yet be fully compatible with all enhanced 911 features, wireless communications provide users with several significant advantages in emergency situations. First and foremost is survivability. Often the natural or other disasters that create emergency situations incapacitate wireline networks. In such situations, wireless

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[4] *Id.* at 6-7.

communications may be the only means available to contact emergency service personnel.[5] Also, because many wireless handsets are mobile, wireless communications provide users with greater geographic coverage than wireline phones. Indeed, many people subscribe to cellular service primarily for its use in roadside emergency situations.

The features of wireless communications that give it certain advantages in emergency situations are not without certain technical and operational limitations. For example, because most wireless handsets are mobile, providing location information for calls placed over wireless networks presents difficulties not associated with wireline communications. Likewise, because wireless systems are configured in a manner that is unique to the area being served, providing enhanced features in each environment may present unique technical difficulties. Also, wireless systems allow roamers from other systems to place and receive calls. Because the local wireless system has limited information about such roamers, providing the PSAP with detailed information about all users is more difficult in the wireless context.

As a result of these differences, some enhanced features associated with enhanced wireline 911 services may be less beneficial in the wireless context.

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[5] For example, in September of 1992, Hurricane Inike, with winds up to 165 miles per hour, slammed into the Hawaiian Island of Kauai. It caused damages in excess of $1 billion, snapped electric poles, blew roofs off houses, and closed airports and businesses for five days. GTE Mobilnet's cell site on Laaukahi Ridge, however, sustained only slight damage. With help from California employees, GTE Mobilnet was able to support the people of Kauai with emergency cell sites, seven GOPACs (GTE emergency kits containing special cellular phones, battery packs, modem capability, etc.) and extended customer service hours.

For example, the ALI feature may not be as beneficial for 911 calls placed over wireless networks. Because the location of a mobile wireless unit may be constantly changing, the location of the handset may be different from the emergency site.

GTE believes that while it is important for enhanced 911 features to be delivered by all carriers -- including wireless -- it is also important that the Commission first examine the technical and cost issues associated with any proposal to extend enhanced 911 features to users of wireless systems. In examining these issues, the Commission should not assume that enhanced 911 features developed for use in wireline telephone networks are equally attainable in the wireless context. Rather, the differences that exist between wireless and wireline service support establishing a different set of enhanced 911 standards for wireless systems.

The Commission should also exercise caution in adopting performance standards that rely on developing technology. In some instances, the Commission has proposed to adopt performance standards for enhanced 911 features that rely on technology that is currently either unavailable, untested, or not yet adapted for wireless applications. The future availability of such technology is primarily under the control of equipment manufacturers and software developers. While GTE believes that the Commission should adopt in this proceeding practical enhanced 911 performance standards that are attainable in the short term based on currently available and tested technology,

the Commission should not adopt long-term mandatory performance requirements that rely on unproven or unavailable technology.

In lieu of adopting long-term standards that may prove unattainable, the Commission should adopt a set of future performance goals that wireless carriers should strive to meet, and periodically monitor industry and manufacturer progress toward reaching these goals. When technology has developed to the point where the performance standard becomes reachable, only then should the Commission consider requiring its implementation.

B. DISCUSSION

1. GTE Supports the Commission's Decision not to Mandate a Particular Technology

In the Notice, the Commission stated that it believed FCC action is necessary to ensure that mobile radio service users have the same level of access to 911 services as wireline service users.[6] In developing proposals that would apply to wireless carriers, however, the Commission stated its intention not to adopt technical standards for enhanced 911 operation. The Commission posited that "industry standards-setting committees are better equipped to address precise technical requirements for enhanced 911 compatibility."[7]

GTE concurs with the Commission's intention not to adopt technical standards. The Commission should avoid adopting technical requirements because, as noted throughout the NPRM, many of the proposals rely upon

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[6] *NPRM* at 18.

[7] *Id.* at 20.

technology that is still under development. As a general matter, the Commission should be wary of mandating technical standards because of the detrimental effect such a decision could have on future technological advances. Such a decision could remove incentives for the development of new technologies not contemplated at the time requirements were adopted.[8] The effect, in the long run, would be to slow the continued enhancement of 911 services.

In summary, GTE supports the Commission's decision to avoid adopting specific technical standards and solutions as a means of promoting enhanced wireless 911 compatibility.

2. Enhanced 911 Performance Standards Should Apply, With Limited Exceptions, to All CMRS Providers, Including Wide-Area SMR Service

In the NPRM, the Commission stated that compatibility requirements for enhanced 911 services should apply to "mobile radio services offering access to real-time voice services provided on the public switched network."[9] GTE believes that the Commission should apply its enhanced 911 compatibility standards to all commercial mobile radio service ("CMRS") providers, including

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[8] The Emergency Services "Joint Experts" echo GTE's concerns, saying, in the context of location identification systems, that performance standards should not "impede the evolution and implementation of new or enhanced location technologies." The Joint Expert Meeting consists of representatives of wireless telecommunications community and the emergency service/public safety community. A meeting of the Joint Experts was held on October 11, 1994 in Chantilly, Virginia. The report from that meeting, dated November 2, 1994) has been filed with the Commission ("*Joint Experts November Report*").

[9] *NPRM* at 18.

providers whose services will be transitioned to CMRS status such as wide-area SMRs.[10]

Public safety is best served by making enhanced 911 service features as widely available as possible. GTE therefore believes that all CMRS providers, except those discussed below, should be subject to similar performance standards. Comprehensive application of performance standards will ensure that no carrier or class of carriers can escape compliance and thereby gain a financial advantage over competitors. Moreover, applying 911 compatibility requirements equally to CMRS providers is consistent with Commission policy in other proceedings[11] and with positions taken by GTE in such proceedings.[12]

Upon adoption of 911 compatibility standards, the rules should apply to all service providers that either are already classified as CMRS or will be transitioned to CMRS. In the *CMRS Order*, the Commission provided that carriers previously classified as private land mobile service providers being reclassified as CMRS providers would continue to be regulated as private until

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[10] The CMRS category includes: cellular service, most SMR services – including wide-area SMR service and other interconnected SMR services, paging systems excluding private internal paging systems, and others. In addition, the Commission has stated that it presumes personal communications services ("PCS") will be classified as CMRS. Implementation of Section 3(n) of the Communications Act, Regulatory Treatment of Mobile services, *Second Report and Order*, GN Docket No. 93-252, 9 FCC Rcd 1411, 1448-1463 (1994) (hereinafter "*CMRS Order*").

[11] In the *CMRS Order*, for example, the Commission decided that similar mobile services will be subject to similar regulations. *Id.*

[12] *See, e.g.*, Eligibility of the Specialized Mobile Radio Services and Radio Services in the 220-222 MHz Land Mobile Band and Use of Radio Dispatch Communications, GN Docket No. 94-90, GTE's Comments, filed October 5, 1994 (discussion at 4-6 demonstrates GTE's support for similar regulatory treatment for similar services and service providers).

August 10, 1996.[13] The transition period was deemed necessary, *inter alia*, to allow such carriers to "adjust their business plans and marketplace strategies to an entirely new regulatory scheme."[14] Because any standards the Commission adopts in this area will be new to all carriers, there is no need to allow any carriers additional time to adjust to their application. Moreover, because many of the standards envisioned by the Commission would not apply for one year or more after the rules are adopted, there will likely be sufficient time for all present and future CMRS providers to prepare for implementation.

While GTE believes that the Commission should apply its enhanced 911 standards to CMRS providers, certain types of CMRS services should be excluded on grounds of technical impossibility. Traditional one-way paging systems are incapable of sending a 911 call and thus should be excluded from any 911 performance standards.

The Commission should also exclude air-ground service providers from having to implement performance standards for 911 service. Airline passengers on air-ground service equipped aircraft are traveling at high speed and altitude making ground based emergency services inaccessible. Moreover, in the event of an emergency on board an aircraft in flight, the airline's professionally trained crew is available to assist passengers, often by use of official airline radio communications. The extension of 911 compatibility rules to air-ground service providers under these circumstances would be inappropriate.

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[13] *CMRS Order* at 1512-1514.

[14] *Id.* at 1512.

In summary, GTE believes that the Commission should apply any enhanced 911 performance standards to all CMRS providers, including wide-area SMR providers. Due to technical or operational limitations, exceptions to this rule should be carved out for one-way paging and air-ground services.

3. Automatic Number Identification ("ANI")

The FCC stated in the NPRM that, at minimum, mobile stations must be able to communicate ANI information to the base station which should be able to interpret the information transmitted from the mobile unit and forward the information to the PSAP.[15] No implementation date was stated for this requirement.

In order for ANI to have value as an identification tool in a wireless environment, 10-digit ANI must be delivered to the PSAP. Delivery of 10-digit ANI to PSAPs poses unique difficulties in a wireless environment. Not all cellular switches are presently able to support 10-digit ANI. However, most cellular switches employed in today's cellular networks could be enhanced over a three to six months time period -- with mostly hardware and software upgrades -- to provide 10-digit ANI to the PSAP.[16]

Today, many PSAPs are equipped to receive only 7- or 8-digit ANI. Seven digits are used to represent the caller's phone number, while the eighth digit is used to identify the area code of the caller in areas where multiple area

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[15] *NPRM* at 20.

[16] Some older cellular switches would be incapable of being upgraded to support 10-digit ANI. Carriers employing such switches in their cellular networks would have to replace them in order to comply with a 10-digit ANI standard.

codes may be served by one PSAP. So long as the PSAP does not serve more than ten area codes, only one extra digit is needed to identify the area codes of potential callers. In the wireless context, however, roamers can originate from systems all over the country, or even, in some instances, from other countries. Thus, it is possible for the PSAP to receive calls from users with any number of area codes. As such, 10-digit ANI must be received by the PSAP in order to be able to identify all possible users.[17] Upgrades to PSAP equipment therefore must be made in order for an ANI delivery standard to be useful in a wireless environment.[18]

In order to reduce costs and speed implementation of an ANI delivery requirement, GTE requests that the Commission allow wireless carriers to continue to route 911 calls and deliver ANI information through LEC tandem switches. Cellular switches currently route wireless 911 calls through LEC tandem switches for reasons of operational and economic efficiency. LEC networks are connected to PSAPs through their tandem switches and routing 911 calls through LEC networks is the most cost-effective method of delivering 911 calls today. GTE estimates that requiring wireless carriers to establish direct links to PSAP locations would involve significant network costs. In addition, if wireless carriers are connected directly to PSAPs, the PSAPs would have to upgrade their switches to an industry standard format. While there may be good

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[17] Ten-digit ANI may also become necessary to identify both wireless and wireline users in NPA overlay situations.

[18] The National Emergency Number Association ("NENA") is currently examining the changes that need to be made to PSAPs to enable them to read 10 digits.

reasons in the future to require direct routing of 911 calls -- such as survivability of 911 calling capacity in the event of LEC network failure -- the best and most efficient way to implement an ANI delivery standard is to allow LEC tandem routing. GTE urges the Commission to consider the issue of direct routing in future stages of this proceeding.

In summary, delivery of ANI information to PSAPs in a wireless environment presents certain difficulties. Ten-digit ANI must be transmitted to the PSAP to accommodate roamers. Most cellular switches would be capable of supporting 10-digit ANI within three to six months if appropriate hardware and software upgrades are performed. PSAPs would also need to be upgraded in order to be capable of reading 10-digit ANI. The Commission should carefully consider the cost of such upgrades prior to adopting an ANI performance requirement. The cost of compliance for wireless providers would be minimized if carriers are allowed to continue to route 911 calls and any attendant information through LEC tandem switches.

4. 911 Availability

In the NPRM, the FCC proposes to require, within one year of the date of the order implementing 911 compatibility standards, that a user have the ability to reach emergency services from any "service initialized" mobile radio handset by calling only 911.[19] Such calls must not require user validation.

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[19] *NPRM* at 20.

GTE supports adoption of this requirement, subject to certain limitations. First, as the Commission recognized in the NPRM, cellular and other wireless carriers can only handle calls placed through a service initialized handset. Second, GTE cannot deliver 911 calls in geographic locations where 911 emergency service is not provided. Third, GTE's ability to handle 911 calls is limited to the extent that it has built-out its network in accordance with its license requirement.[20] The Commission should consider these limitations in fashioning a wireless 911 availability standard.

In summary, GTE supports the Commission's proposal to require, within one year of an order, that users of wireless service be able to reach emergency services from any service initialized mobile radio handset by calling 911. This capability, however, would be limited by the availability of 911 service in the geographic area, and to the extent of the wireless network build-out.

5. 911 Call Priority

The FCC proposes to require that, within one year of the order, originating 911 calls be assigned priority over non-emergency service calls. Such priority must be assigned at the handset placing 911 calls at the beginning of any queue for calls waiting to be transmitted into the network. Because of the unknown nature and importance of the calls in progress, this priority would not require the interruption of calls in progress.[21] GTE supports the notion of 911 and other

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[20] GTE would oppose any attempts by the Commission to impose, for the purposes of extending the availability of emergency services, any additional build-out requirement above and beyond existing license requirements.

[21] *NPRM* at 21.

emergency caller priority. In situations where wireless channel capacity is full, such calls should ideally receive priority access to the next available channel.[22] A one-year implementation plan for a 911 caller priority requirement, however, does not appear feasible. The Commission should not adopt an implementation schedule for call priority until it can be certain that developed and tested technology can support such a requirement.

In cellular networks today, calls that cannot be completed due to lack of channel availability are not queued at the switch. Such calls must be redialed until a channel becomes available. As such, to the best of GTE's knowledge, it is not possible at this time to arrange priority access on 911 calls or any other calls based on the number dialed.

It is reasonable to believe that software and hardware may be developed in the future that will enable cellular and other CMRS providers to prioritize 911 calls. For example, technology could be developed and implemented to allow the switch upon recognizing a blocked 911 attempt to reject non-emergency call origination attempts, thereby giving temporary priority to emergency calls. Such technology, however, does not exist today.

Development of a call priority capability depends largely upon the work of wireless infrastructure equipment manufacturers. These entities are better suited at present to answer questions about when such capability will be deliverable and at what cost. GTE recommends that the Commission maintain

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[22] GTE supports the Commission's tentative decision not to require that ongoing calls be interrupted. As the Commission noted, the ongoing calls may be every bit as important as the 911 call.

call priority as a goal of wireless 911 service and require periodic reports from manufacturers and industry standards groups on its feasibility.

In summary, while GTE agrees that the Commission and the industry should strive to implement some form of call priority, implementation does not appear feasible in one year. Call priority is not possible in today's cellular networks because calls are not queued at the switch. Technology that would enable some form of call priority may be developed in the future. Equipment manufacturers and software developers are better able to tell the Commission when call priority will be possible.

6. User Location Information

The Commission states in the Notice that wireless systems should have the ability to identify the location of the wireless station used to make a 911 call. The Commission recognizes that ALI is more difficult to provide in a wireless environment, and therefore proposes to adopt ALI requirements in three stages. The Commission seeks comment on the technical and cost considerations affecting the implementation of an ALI requirement.[23]

GTE generally supports the Commission's inquiry into the feasibility of wireless networks delivering ALI to the PSAP with each 911 call. Prior to adopting any standard, however, GTE urges the Commission to analyze the cost of compliance with the standard. The Commission should only require deployment of location identification systems that are economically feasible. In

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[23] *NPRM* at 22-25.

the meantime, industry standards groups will continue to work towards developing cost-effective methods of providing more advanced location information.

GTE also believes that the Commission should exercise extreme caution in proposing 911 service performance standards that are based on still-developing technologies. Performance standards based on unproven or untested technologies should be avoided because the Commission cannot be certain that the technology will continue to develop at a pace that will enable implementation at a time certain in the future. Also, reliable cost information is not likely to be available until the technology has sufficiently been tested in an existing system.

Moreover, the Commission cannot be certain of location system accuracy prior to the full development and testing of the technology. Indeed, even after implementation, because of the number of variables that can affect the accuracy of location estimates, there is no way a carrier will able to certify to the Commission that location information will always fall within the given accuracy parameters.[24] Accordingly, GTE urges the Commission only to adopt ALI standards that it is reasonably certain can be reached in the time allotted, and that do not require carriers to guaranty accuracy of the information provided.

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[24] For example, the existence of "shadow spots" or "dead spots" may cause a signal to be received by a base station that is not the closest to the origination point. Also, signal obstructions – such as buildings and bridges – and the base station configuration may affect location identification accuracy.

a. Stage One

In the first stage, the Commission proposes to require wireless service providers, within one year of the order, to relay to the PSAP information identifying the base station or cell site and sector – where sectored antennas are deployed – receiving a 911 call.[25] GTE generally supports adoption of this stage one performance requirement. The Commission should take note, however, that the accuracy of the location information is subject to certain limitations.

GTE cellular networks can be capable of delivering to the PSAP base station/cell cite and sector location information to the PSAP within one year of adoption of an order. GTE's ability to provide such information, however, will be subject to certain limitations. First, the location identified would be the serving cell site. The serving cell site is not always the closest cell -- "shadows" or "dead spots" in certain locations may inhibit the call from being received by the cell closest to the point of transmission. PSAP and emergency service personnel receiving such information should be made aware of this limitation.

Second, in order to provide cell site and sector information to the PSAP, software and network changes must be made. In the wireline environment, the ANI reported to the PSAP is used to access a database that provides emergency personnel the stored location information for the caller. Because stored location information is useless in the mobile wireless environment, ALI information must be conveyed to the PSAP separately from any ANI information. In order to

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[25] *NPRM* at 24.

provide both ANI and ALI as the Notice contemplates, rather extensive and costly software and hardware upgrades must be made, including:

- hardware upgrades to cellular switches not capable of supporting 10-digit ANI;
- upgrades to PSAP switches to enable them to accept 10-digit ANI in an industry format;
- installation of T-1 trunks to either the PSAPs or the LEC tandems;
- development of a location information platform including work stations and extensive software to interface with mobile switches;
- purchase and testing of location estimation and calculation equipment; and
- set-up and testing of location equipment and software prior to implementation, and during operation for specific sites.

The costs of such upgrades should be weighed against the benefits such information will provide prior to adopting a stage one requirement.[26]

b. Stage Two

Under stage two, the Commission would require, within three years of an order adopting 911 compatibility standards, that the associated base station or cell site be capable of relaying to the PSAP the approximate location and distance of the mobile handset from the receiving base station or cell site.[27] While GTE believes that three years might be a reasonable target for wireless networks to implement a distance from cell site capability, no clear "best method"

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[26] For a discussion of cost issues, *see* section II.B.12, *infra*, p.31.

[27] *NPRM* at 24.