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BEFORE THE
Federal Communications Commission
WASHINGTON, D. C. 20554

COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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

To: The Commission

JOINT COMMENTS OF

**ASSOCIATION OF PUBLIC-SAFETY COMMUNICATIONS
OFFICIALS-INTERNATIONAL, INC.**

NATIONAL EMERGENCY NUMBER ASSOCIATION

NATIONAL ASSOCIATION OF STATE NINE ONE ONE ADMINISTRATORS

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TABLE OF CONTENTS

SUMMARY.....	3
INTRODUCTION.....	9
I. COMPATIBILITY OF PBX EQUIPMENT WITH E9-1-1 SYSTEMS...	12
A. 9-1-1 Availability.....	17
B. Attendant Notification.....	19
C. ALI Database Maintenance.....	20
D. Station Number Identification (SNI).....	21
E. Information Protocol Standard.....	22
F. Local Exchange Company Services.....	24
G. Implementation Schedule.....	27
H. Preemption.....	29
II. COMPATIBILITY OF WIRELESS SERVICES WITH ENHANCED 9-1-1.....	30
A. 9-1-1 Availability.....	36
B. Grade of Service.....	39
C. 9-1-1 Call Priority.....	39
D. User Location Information.....	40
E. Re-Ring/Call Back.....	43
F. Common Channel Signalling.....	45
G. Access to Text Telephone Devices (TTY).....	49
H. Equipment Manufacture, Importation, and Labeling	50
I. Preemption.....	52
III. ADDITIONAL CONSIDERATIONS.....	52
A. Privacy Issues.....	52
B. Compatibility with Network Services.....	53
C. Preemption.....	54
CONCLUSIONS.....	55

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COMMENTS OF APCO, NENA and NASNA

The Association of Public-Safety Communications Officials-International, Inc. ("APCO"), the National Emergency Number Association ("NENA"), and the National Association of State Nine One One Administrators ("NASNA"), hereby submit the following joint comments in response to the Commission's Notice of Proposed Rulemaking, FCC 94-237 (released October 19, 1994), in the above-captioned proceeding.

APCO is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications. APCO's over 11,000 Members come from every type of public safety organization imaginable, including 9-1-1 centers and public safety departments such as police, fire, emergency medical, highway maintenance, disaster relief, forestry, and local government.

APCO exists to serve the people who manage, operate, maintain, and supply the communications systems used to safeguard the lives and property of citizens everywhere.

NENA was established in 1982 as a not-for-profit in order to further the goal of "One Nation...One Number." NENA's mission is to foster the technological advancement, availability, and implementation of a universal emergency telephone number system. In carrying out its mission, NENA promotes research, planning, training, and education. The protection of human life, the preservation of property, and the maintenance of general community security are among NENA's objectives.

NASNA is an organization of state officials whose purpose includes:

- Promoting information sharing amongst those states with programs dedicated to implementing 9-1-1 emergency telephone systems;
- Assisting other states with resolving issues necessary to accomplish statewide implementation and maintenance;
- Encouraging the establishment of a coordination person within each state or province;
- Identifying and recommending minimum standards for 9-1-1 emergency telephone systems;

- Identifying and recommending appropriate legislation or rules concerning the administration of statewide 9-1-1 emergency telephone system programs and;
- Serving as a knowledge resource for fulfilling the purposes described herein.

SUMMARY

The American public has grown to consider 9-1-1 as a universal access to emergency services. This valuable service has been credited with saving many lives and reducing property damage. However, telephone deregulation, rapidly advancing technology used in private networks, and the explosion of wireless services is increasingly leading to degradation of 9-1-1 service. APCO, NENA, and NASNA have joined together in an unprecedented cooperative effort to respond to this threat. We are proposing that the Commission take the following steps to ensure the continued viability of enhanced 9-1-1:

Regarding the Compatibility of PBX Equipment with E9-1-1 Systems:

- Establish requirements for PBX and PBX-like systems, including central office based systems (e.g., Centrex), to be compatible with E9-1-1 technical standards.

- Limit new rules to the technical interface with the PSTN and the database format.
- Allow state and local authorities to determine in which cases a PBX must be connected directly to the E9-1-1 network and the enforcement of those requirements.
- Require that all users of telephone equipment, including federal government users, comply with the E9-1-1 interface requirements where required by state and local laws.
- Provide for flexible technical interface rules that allow for technical change by referencing industry standards and requiring public safety involvement in any standard developed.
- Require PBX and similar equipment to provide 9-1-1 access without a requirement to dial any access code regardless of any call restrictions placed on the PBX station.
- Require any PBX equipment not meeting the Commission's rules to be labeled during the interim period prior to the mandatory compliance date specified by the Commission.

- Require that PBX equipment be capable of notifying an attendant when 9-1-1 is dialed.

- Require that 9-1-1 service providers provide their databases in a NENA standard format, but leave local database administration issues and interfaces to state and local governments.

- Require the use of North American Numbering Plan (NANP) compliant numbers for identifying PBX stations to the E9-1-1 network.

- Prohibit the use of so-called "pseudo" numbers for PBX station identification.

- Require that any provider of "dialtone or its functional equivalent" provide E9-1-1 access, interconnection, and subscriber information.

- Require that all new network services be developed with E9-1-1 capability.

- Require that PBX and PBX-like equipment and services meet the Commission's rules within 18 months and labeling with 30 days of the effective date.

- Preempt only those state and local regulations that deal specifically with the network interface to the minimum extent necessary.

Regarding Compatibility of Wireless Services with E9-1-1:

- Require existing and new CMRS systems to provide E9-1-1 compatibility.
- Prohibit non-voice data devices from having the capability to access E9-1-1 unless data interface standards and the concerns of public safety can be resolved. This prohibition should not include TTY devices used by the hearing and speech impaired.
- Require CMRS systems to provide cell specific information within 1 year, two-dimension location information within 3 years, and three-dimension location information within 5 years.
- Require that all service initialized wireless units provide access to 9-1-1 by dialing the digits "9" "1" "1" only and prohibit the use of *9-1-1, *9-9-9, and other dialing schemes.

- Require wireless service providers to meet the list of PSAP service requirements as outlined in the Wireless and Emergency Services Joint Experts Meeting report.
- Require that any new wireless and wireline service provide for E9-1-1 as a fundamental part of the service.
- Require a grade-of-service of one blocked call per 100 call attempts for 9-1-1 calls and require a minimum of two trunks from each system point of presence.
- Require 9-1-1 call priority.
- Require user location information to within 10 meters to be provided within the timeframe outlined in the NPRM.
- Require that the capability to call back both "home" and "roamer" subscribers from the PSAP be provided.
- Require that network providers, including wireline and wireless, modify the existing Common Channel Signalling systems to accommodate E9-1-1.
- Require that wireless devices be compatible with TTY devices.

- Require equipment that does not meet the rules to be labeled in the interim period between the effective date of the rules and the compliance date.
- Require all service providers, wireless and wireline, to provide complete subscriber information as part of their systems, with the display of the information governed by local regulations.
- Require the wireline network to provide priority access to 9-1-1 calls.
- Provide a method where the concerns of public safety can be considered and taken into consideration in the standards-making process.

The Commission must take these steps quickly and decisively to prevent the further erosion of 9-1-1 system capability.

INTRODUCTION

The public safety community, starting in Hayleyville, Alabama in 1969, in concert with the telephone companies, and with the support of the entire country, has successfully converted from a wide variety of numbers used for reaching emergency assistance to a single number, "9-1-1." This single number can now be used to reach emergency assistance from over 80% of wireline telephones. As the numbers and sizes of PBX and wireless systems has grown, users of these systems also expect to be able to reach emergency help by dialing 9-1-1.

Within the last 10 years, most 9-1-1 systems have been upgraded to Enhanced (E) 9-1-1. This added feature displays the caller's telephone number and location based on the Local Exchange Carriers (LEC's) records. This added capability has saved many lives in situations where the caller was disoriented, disabled, unable to speak, or did not know their location, and needed emergency help. In these situations, 9-1-1 telecommunicators use the address provided by the (E)9-1-1 system to dispatch emergency responders. This allows for virtually immediate dispatch, instead of the time-consuming process of requesting a "call trace" from the LEC. In addition, this capability, in conjunction with "selective routing", sends the call to the most appropriate public safety answering point (PSAP) based on the address in the LEC database.

Today, enhanced (E)9-1-1 systems are not working as well as they should when a call is made from either a PBX or other telephone systems (including, for example, "key-telephone and "Centrex" or similar services). The number associated with PBX equipment may only be a "main" number reaching a premises operator or attendant. This is likely not the number of the calling telephone -- which could be distant from the operator (e.g., in a remote building or another town). There have been numerous incidents reported in the press where emergency help was delayed because of this situation.

While PBX's, multi-line telephone systems, and Centrex-like services have become a standard part of business communications, they are now beginning to be used in residential situations where an apartment or condominium owner installs a PBX to provide telephone service to the units. The owner then becomes the "telephone company" to the tenants. The LEC does not have any record of the individual tenants and only the address of the installed location where the PBX trunks terminate.

When the calling telephone is mobile, and communicates by radio rather than wire, the problems of identifying, locating, and dispatching help to the caller are compounded. The number of the mobile telephone is not transmitted to the PSAP and the caller's location is not known unless the caller

can provide it accurately. For a variety of reasons, the ability to call-back may be impossible.

Twenty-five years ago, AT&T, a cellular service pioneer, predicted that 900,000 of these new radio telephones would be in service by the end of the century. Instead, with 5 years left to go, over 22 million cellular phones are estimated to be in widespread use, not just for business. Personal Communications Services ("PCS") and other new offerings will place millions of additional wireless telephones in the marketplace. Ironically, much of the growth can be traced to non-business users' concerns for personal and community safety.

Unfortunately, the progress made in improving access to emergency services for citizens of the United States will be significantly reduced in the immediate future with the rapid expansion these new service offerings. The Commission is to be commended, therefore, for proposing rules to address this threat to 9-1-1 emergency communications. Providing for safety of life and property is a paramount function of government, and few services are so readily identified with safety of life and property as 9-1-1. The Commission must act quickly and decisively on this issue to maintain the viability of E9-1-1 systems across this nation. For this reason, APCO, NENA, and NASNA have formed an unprecedented

partnership in response to the issues raised in this proceeding.

I. COMPATIBILITY OF PBX EQUIPMENT WITH E9-1-1 SYSTEMS

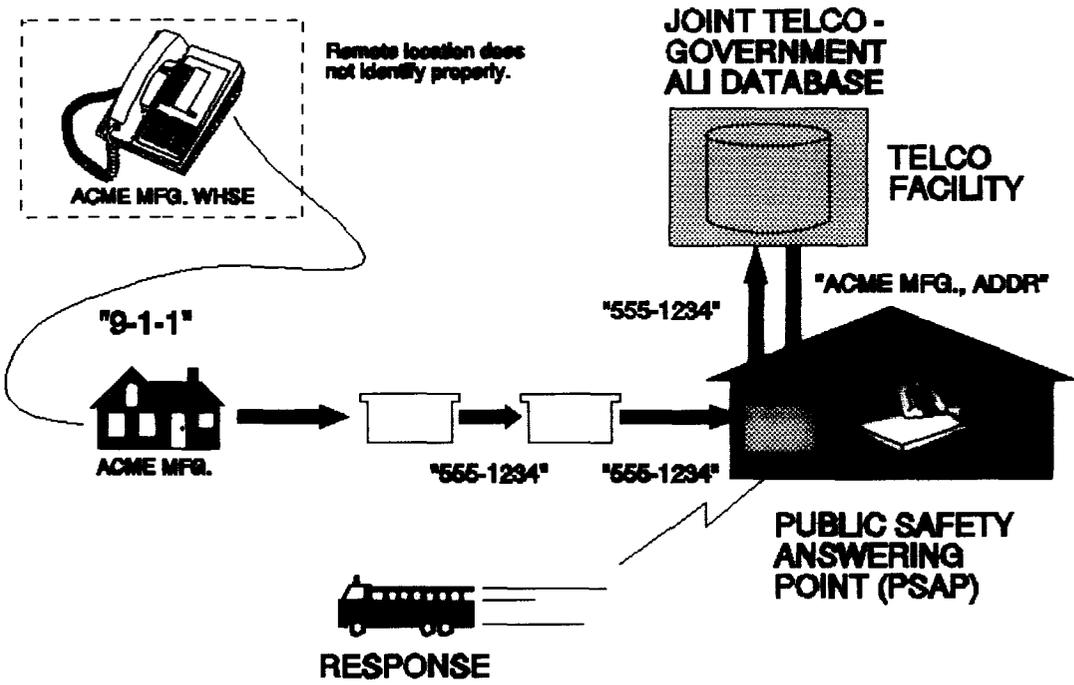
We strongly support the concept of establishing requirements for PBX equipment to be compatible with E9-1-1 systems. The Commission should also adopt the same rules for Centrex-like services and, therefore, the term "PBX" as used in these comments incorporates Centrex-like services. These Centrex-like services are defined as those services which are central-office-based and provide functions similar to PBX systems. These are known by a variety of trade names such as: Centrex, Centron, Centra-Net, depending on who is providing the service and the equipment provider. The term proposed by the Commission in 68.3 "Dispersed Telephone Systems" should cover PBX and Centrex-like systems. These services provide many of the same features as PBX systems and many of the same problems for E9-1-1 callers and emergency responders.

There have been numerous documented cases where emergency response was delayed because the Automatic Location Information (ALI) displayed for a 9-1-1 call from a PBX was for the main PBX location and not the location of the caller's station. Some of these were mentioned in the original Adcomm petition and in the NPRM. Yet, the ability to accommodate E9-1-1 systems has become more technically

feasible as the capability of PBX equipment has increased. Indeed, some manufacturers today provide equipment that can supply the appropriate signalling compatible with most of the E9-1-1 systems in place. However, other manufacturers have chosen not to equip their products with this capability, even though the technology has been available for many years. This is clearly an area requiring Commission action to ensure that manufacturers will produce compatible equipment.

All PBX installations may not need to comply with all the requirements for interconnection with E9-1-1 systems. Each state or locality should be permitted to adopt regulations as to which PBX installations must have full E9-1-1 interconnect. However, all PBX type equipment will need to have consistent access to 9-1-1 regardless of the size or configuration of the system.

Some PBX systems only provide telephone service to an area that is relatively small and easily accessible by emergency service personnel. These installations may not require a special access to the 9-1-1 system as the service address of the PBX may provide adequate location information. Other installation situations may have off-premises extensions which would require a special interface to the E9-1-1 network to pass station identification. Figure 1 is an example of these situations. The size of the PBX (e.g, the number of stations or ports) is not necessarily a good



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indicator of whether or not a special E9-1-1 interface will be required. In addition, all equipment should have the capability to interface to E9-1-1 systems in case they are expanded or in the future have off-premises extensions attached.^{1/}

This requirement should apply to all users of PBX equipment including the Federal Government. Sometimes in the past, the Federal Government has been excluded from complying with FCC regulations. There are many cases where the Federal Government operates large PBX systems (e.g., military bases, large office buildings, etc.). Today these systems create problems for local E9-1-1 systems because they do not provide caller location information.

The Commission should focus on the technical issues related to the interface to the network and should require that all equipment be capable of providing the required interface. If not carefully crafted, the technical interface requirements written into the Commission's rules could stifle technical innovation restricting both equipment suppliers and E9-1-1 systems. The technical specifications outlined in the Adcomm petition (i.e., multi-frequency signalling, CAMA type trunks) should be the minimum requirements. Currently, this

^{1/} We believe that wireless PBXs should meet the same requirements as wired PBXs. Wireless systems would need to meet whatever location accuracy requirements were set by the state or local governments.

is the most common interface, but there are exceptions. The Commission should require that network interface meet the "CAMA" interface as modified when used for E9-1-1, the direct trunked interface complying with Bellcore TR-TSY-350, and any other relevant interface adopted by TIA as a standard. This will allow industry and the 9-1-1 community to work cooperatively and the network to evolve into a more advanced architecture.

PBX manufacturers must provide PBX interconnection with the E9-1-1 network whether or not selective routing is employed. In the selective routing case, the interface is essentially the standard "CAMA" type trunk with slight signalling modifications for E9-1-1 depending on the specific implementation. In the case where there is no selective routing, the trunk still uses multi-frequency signalling but with a different data and trunk format. This interface is defined in Bellcore TR-TSY-350, E9-1-1 Public Safety Answering Point: Interface Between a 1/1AESS Switch and Customer Premises Equipment.

There are some issues that need not be addressed in the Commission's rules. These issues are better handled and monitored at the state and local level. For example, the actual application and requirement for interconnection should be controlled at the state and local level. Through state and local regulations, the determination of the size of area

served by a PBX and who will enforce the requirements to be connected to the E9-1-1 network can be controlled. State and local officials have existing mechanisms to monitor and enforce their requirements. For example, in one area local building or fire inspectors could perform the inspections. In other areas, Departments of Labor and Industries or other agencies charged with monitoring work-place safety could perform the tasks.

A. 9-1-1 Availability

Currently, a 9-1-1 caller using a PBX system usually must dial something other than just 9-1-1 to reach the 9-1-1 system. In most cases, 9-9-1-1 must be dialed. However, in some cases, 9-9-9-1-1, 8-9-1-1, or some other leading digits must also be dialed. Public education campaigns stress that only 9-1-1 needs to be dialed to reach emergency help. Of course this is true for the majority of the single-line residential telephones and electro-mechanical key-type telephones used in small businesses. The majority of the public is not familiar with the subtleties of telephone system operation, especially during an emergency. A caller trying to dial 9-1-1 from behind a PBX may easily forget to dial the outside access digit. This problem is compounded at locations where the general public might be using telephones served by a PBX (e.g., schools, motel/hotels, stores, etc.).

A particularly bad situation is where an electronic key system is located behind a Centrex system. In this case, the caller pushes a line select button and then dials 9-1-1 upon hearing dialtone. There is no indication that a "9" must be dialed preceding the "9-1-1." This can cause problems even for those who are familiar with telephone systems because there is no indication Centrex-like services are being used.

The Commission must require that PBX equipment provide access to 9-1-1 by dialing the digits "9" "1" "1" without any access code. This should apply to all telephones, even those blocked from normal outside access. We believe this approach is also supported by the original Adcomm petition and the TIA TSB-103. We support the language proposed by the Adcomm Petition for section 68.114 E9-1-1 compatibility modified as follows:

§ 68.114 (E) 9-1-1 compatibility.

Demonstrated compatibility with E9-1-1 shall be required of all registered telephone equipment capable of supporting off-premises telephone stations that may be used for access to public emergency services. Further, access via 9-1-1 shall not be blocked by call restriction features invoked in the CPE nor shall any additional access be required to reach the E9-1-1 emergency services trunk.

This requirement should apply to central office based services (e.g., Centrex, CentraNet, and similar services), private branch exchanges, and electronic key systems. The Commission should also adopt requirements for labelling equipment sold prior to the implementation date that does not provide 9-1-1 access as defined by the final Commission rules.

B. Attendant Notification

The Commission should adopt technical rules requiring that PBX equipment have the capability of automatically notifying an attendant when an 9-1-1 call is placed. The attendant notification should include the extension number that has dialed 9-1-1. This would have the potential to shorten the time required for emergency responders to locate the caller because the local attendant would be alerted and could either be waiting for the emergency responders to arrive or could begin local emergency locating and response procedures. Some states, however, have regulations prohibiting attendant notification because of privacy concerns. Therefore, while all equipment should be capable of this feature, it should be capable of being "switched on or off" depending on the local regulations either requiring or prohibiting this feature.

C. ALI Database Maintenance

The ALI database provides location information as to where a particular telephone station is located. In most E9-1-1 systems, this information is retrieved from the ALI database operated by the LEC. A single database may have records for several states. However, in some cases records may be in a database operated by the local PSAP, county, or state. The PBX records are transferred at some regular interval to this main database. This process is generally straightforward and handled by the LEC as a service offering, where available. The database information is generally not part of the telephone system, but rather handled as an administrative function of the telephone system owner. In some cases, this may be done by an off-site contractor.

Because the actual matching of location to telephone number is typically done outside the telephone switch, the Commission should not provide rules that apply to the management of the database from the PBX owner's viewpoint. Rather, the Commission should require that any provider of E9-1-1 service provide the database in a NENA standard format (see subsection E, below). This will offer service companies and users, that have to deal with multiple LEC's and service providers, a common database standard with which to interface. We believe local and state governments are in the best position to determine how often the database should be updated and how accurate the information should be.

D. Station Number Identification (SNI)

Station Number Identification (SNI) is a complex issue. There are proposals ranging from requiring that every PBX station have its own valid North American Numbering Plan (NANP) Direct-Inward-Dial (DID) number to those where "pseudo" numbers are used. PBX's should have the capability to provide 10-digit numbers that conform with the NANP, to allow PSAP's to call back into the PBX, for follow-up information or if the caller is disconnected prior to the PSAP telecommunicator obtaining enough information.

We are concerned about the use of so-called "pseudo" numbers or "artificial" SNI and the potential for confusion in the database. While some LEC's currently allow pseudo numbers, this approach is shortsighted and will result in confusion and the creation of another NANP for pseudo numbers. This problem will become even more apparent when E9-1-1 systems and different databases are linked together. Therefore, the Commission should require the use of 10-digit numbers conforming to the NANP for SNI.

The use of NANP numbers for SNI has raised concerns about the lack of numbers and the cost to the PBX owner of buying these numbers from the LEC. However, every station in the PBX does not necessarily need to be uniquely identified. The identification only needs to be to the level required to provide a method for calling the 9-1-1 caller back and to

locate the caller accurately enough to provide a prompt response by the applicable public safety agencies. Even in a single family dwelling, the public safety responder may have to search a couple thousand square feet to locate the caller. The PBX owner should only have to use enough numbers to be able to identify the caller to a location as accurate as the local authorities require. The same number would then also ring on a telephone or telephones in the immediate area. For example, a bank might only need one unique number per branch or school for each building (e.g, cafeteria, locker room, gym, etc.).

E. Information Protocol Standard

There are three components to the Information Protocol:

1. The information transferred from the PBX to the E9-1-1 network.
2. The information regarding the location of the PBX station that resides in the ALI database.
3. Future information requirements where the location information may be sent along as a part of the call.

Item number one above is defined in the Bellcore LSSGR documents defining multi-frequency signalling and CAMA trunks; and in Bellcore TR-TSY-350, E9-1-1 Public Safety

Answering Point: Interface Between a 1/1AESS Switch and Customer Premises Equipment, defining the interface between the selective router and the PSAP equipment. The Commission should adopt these standards as a minimum for the technical interface to either the network or a PSAP as applicable. The Commission should require public safety participation in any standards developed in industry standards setting bodies.

The ALI database information format is clearly described in database formats recommended by the National Emergency Number Association (NENA). These standards have not been submitted to a recognized standards organization (e.g., American National Standards Institute or the Telecommunications Industry Association). However, we expect that the NENA format could be adopted as most existing databases either comply or are being upgraded to comply. Therefore, the Commission should require any LEC or other supplier of E9-1-1 database services comply with the NENA database format.

The Commission should not, however, define the exact method for transferring the information between the PBX owner and the database provider. This is best handled at the local level, determined by the capabilities of the PBX owner and database provider. In addition, technology changes rapidly. This makes it difficult for Commission rules to adapt to changing data communications protocols in a timely manner.