A Policy Maker Blueprint for Transitioning to the Next Generation 9-1-1 System

ISSUES AND RECOMMENDATIONS FOR STATE AND FEDERAL POLICY MAKERS TO ENABLE NG9-1-1

September 2008

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4350 NORTH FAIRFAX DRIVE, SUITE 750
ARLINGTON, VA 22203 • 1-800-332-3911

THE CHALLENGE

Every year approximately 240 million 9-1-1 calls are made in the United States with countless lives saved and property protected. Yet, our nation's 9-1-1 system is being pushed to the edge and is increasingly falling behind as technology in the hands of consumers rapidly advances past the capabilities of the current E9-1-1 system. Text messaging and instant messaging are becoming a more common method of communication than the traditional two way voice telephone call. Pictures and videos from phones and PDAs are being shared instantly with friends and colleagues around the world. Video and text based communications are replacing traditional TTY communications for the deaf and hard of hearing. Automobiles are being outfitted with telematics systems that automatically open up a voice call and provide valuable crash data when a car is involved in an accident. These are all amazing technologies, and citizens can reasonably expect to be able to contact 9-1-1 with technologies they use to communicate every day. Yet, all of these advancements in consumer communications technology have one important characteristic in common: ***today's legacy 9-1-1 system cannot deliver any of this information to 9-1-1 centers***. The architecture of the legacy 9-1-1 system is based on circuit switched telephony designed to enable telephone calls to 9-1-1, not data. Simply put, the 9-1-1 system has not kept up with technology and is badly in need of modernization.

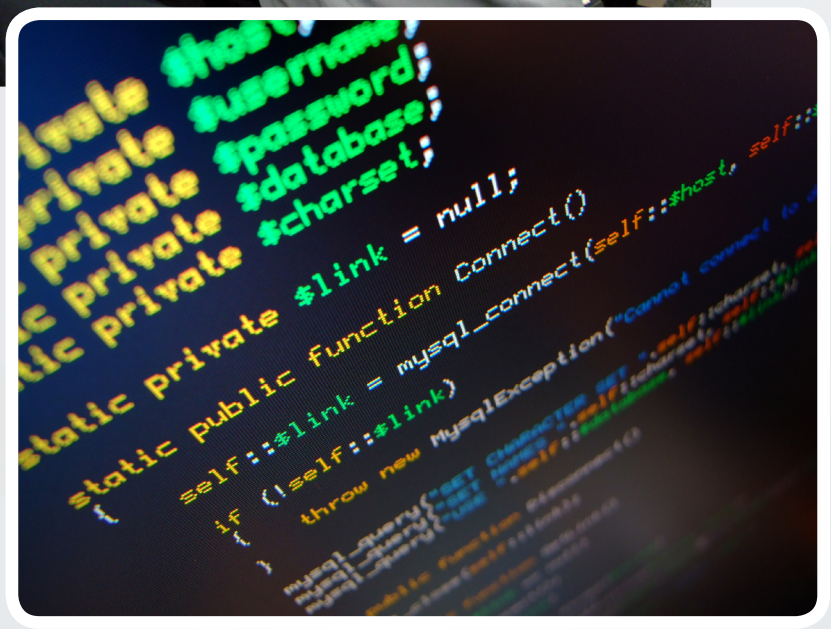
THE OPPORTUNITY

While the current 9-1-1 system is certainly limited, there is good news. Significant work has been done to design and prepare for the transition to an IP-based Next Generation (NG) 9-1-1 system to handle all of the communications services listed above and more. NG9-1-1 is the future of emergency communications.[1] Consumers will have more ways to access 9-1-1 using the types of technology they use to communicate every day. 9-1-1 centers will receive more and better information about emergencies of all magnitudes to effectuate a more intelligent emergency response. The system will be based on the most modern technology, with increasing intelligence in the network and the use of shared services to potentially lower overall system costs. In sum, NG9-1-1 can mean increased capabilities, efficiencies and opportunities for consumers and public safety agencies, more lives saved and potentially lower costs for state and local governments facing increasingly tight budgets.

1 More information on NG9-1-1 is available at www.nena.org and in the Appendix at the end of this document.

THE CHALLENGE AND OPPORTUNITY FOR POLICY MAKERS

Significant NG9-1-1 technology and standards development is underway and proof of concept trials and demonstrations are being conducted. This is essential, but equally important to technology development, is the fact that NG9-1-1 also requires the modernization of state and national 9-1-1 policies, regulations and statutes. NG9-1-1 is not yet a fundamental policy goal at the state and national level. Some existing state and federal regulations and statutes arguably prohibit, and certainly do not help enable, NG9-1-1. All the technology development in the world will only be as effective as the policies and rules that enable the implementation of NG9-1-1.



THE PURPOSE OF THIS REPORT

NENA's Next Generation Partner Program has developed multiple Reports on NG9-1-1 policy issues and recently completed several NG9-1-1 Transition Policy Briefs. These documents, contained in this report, raise important policy issues that must be addressed simultaneously with technology and standards development, and provide recommendations for policy maker consideration. To meet the objective of a fully functioning next generation 9-1-1 and emergency communications system, it is critical that state and federal policy makers (1) make the transition to NG9-1-1 a fundamental policy objective and (2) take timely and carefully scrutinized action to analyze and update existing 9-1-1 rules and regulations. There can be no more "critical infrastructure" than the 9-1-1 system. Thus, this document is designed to assist state and federal government leaders to initiate critical policy efforts necessary for the modernization of our 9-1-1 system.

NEXT GENERATION PARTNER PROGRAM
NG9-1-1 TRANSITION POLICY BRIEF

NUMBER: One

SUBJECT: State-Level 9-1-1 Leadership and Coordination

OBJECTIVE: Establishment of a State Level organization to plan, coordinate and implement a Next Generation 9-1-1 system

TARGET AUDIENCE: 9-1-1 Authorities, Legislatures and Governors' Offices

JURISDICTION: State

BACKGROUND: The level and manner of coordination of 9-1-1 varies widely from state to state. In some states, 9-1-1 is strictly a local matter. A number of states have centralized the 9-1-1 program function or have otherwise established a statewide coordination mechanism, although their circumstances and authority vary widely due to the way state laws and regulations conceive and define the state-level function. For example, some states have a central, state-level 9-1-1 program, but it is primarily focused on cost reimbursement. Some states have centralized the 9-1-1 oversight function, but it focused exclusively on wireless. Some states have centralized the 9-1-1 oversight function and provided it with broad authority and adequate resources to oversee all aspects of 9-1-1. And some states have elected to combine local autonomy and state level coordination. The ability to effect both interstate and intrastate coordination of NG9-1-1, and to coordinate it with other emergency communications, will be a key factor in its – NG9-1-1's – success.

DISCUSSION: The principle of state-level coordination for 9-1-1, and of overall emergency communications, is not new. It is explicitly articulated in the Wireless Communications and Public Safety Act of 1999[2], in which Congress desired states to implement seamless, end-to-end emergency telecommunications services and found that efficiency in deploying such "requires statewide coordination of the efforts of local public safety, fire service and law enforcement officials, emergency dispatch providers, and transportation officials; the establishment of sources of adequate funding for carrier and public safety, fire service and law enforcement agency technology development and deployment; the coordination and integration of emergency communications with traffic control and management systems…" Furthermore, Congress directed the FCC to help make this happen by encouraging the development and implementation of "coordinated statewide deployment plans, through an entity designated by the governor" that should "include representatives of the foregoing organizations and entities in development and implementation of such plans." The principle of statewide coordination and planning under the auspices of a designated state-level entity is reinforced in the ENHANCE 911 Act of 2004 and is a specific eligibility criterion for PSAP grant funding under the Act. Similarly, statewide planning and coordination for use of homeland security communications grants is being required, and gradually expanded from solely first responder voice communications to include all emergency organizations and all types of emergency communications.

The link between these principles and the vision of NG9-1-1 is clear. Many key features and functions NG9-1-1 will require an effective state-level leadership and coordination mechanism to be in place. NG9-1-1 and next generation emergency communications generally, as an "interconnected system of

2 PUBLIC LAW 106-81-October 26, 1999.

local and regional emergency services systems (system of systems)"[3] that ultimately becomes "…a nationally interoperable emergency services internetwork"[4] with the coordinated involvement of all state, regional and local stakeholders is what will finally achieve the vision of the 1999 Act.

Although the staffing of PSAPs and handling of 9-1-1 calls (and associated emergency response) will generally remain a local function, subject primarily to local decisions, aspects of NG9-1-1 will require state-level planning and implementation coordination. For example, network and related information delivery functions will no longer be agency specific, but will be shared by all authorized emergency agencies. Such shared Emergency Services IP Networks (ESInets) may be developed and managed locally or regionally, but need strong state level leadership and coordination, to ensure both operability and interoperability of state, local and regional ESInets, and to ensure they conform to applicable policies and industry-based standards. Further, coordination with national entities to ensure statewide compliance with required standards, federal policies and the like is best accomplished when said coordination occurs at the state level.

ACTION PROPOSED TO RESOLVE ISSUE:

- Each state needs to have an organization, with appropriate authority, responsible for planning, coordinating and implementing the NG9-1-1 system, that reflects the following:
  - Statewide scope
  - Coordination within the state and with adjacent states and federal authorities
  - Coordination with other emergency service functions and other relevant stakeholders involved in the development and implementation of seamless, end-to-end NG emergency communication services
  - The appropriate adoption of industry-based standards, rules, policies and procedures by stakeholders necessary to support such deployment
  - Adequate funding to support state and local planning and implementation of NG9-1-1
- Each state needs to have an organization, with appropriate authority, responsible for planning, coordinating and implementing a seamless Next Generation end-to-end emergency communication system, including 9-1-1.

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3 USDOT. "Next Generation 9-1-1 (NG9-1-1) System Initiative: Concept of Operations." Intelligent Transportation Systems. April 2007. 12. http://www.its.dot.gov/ng911/ng911_pubs.htm (April 19, 2008)

4 Ibid

NEXT GENERATION PARTNER PROGRAM
NG9-1-1 TRANSITION POLICY BRIEF

NUMBER: Two

SUBJECT: Funding the NG9-1-1 System

OBJECTIVE: Ensure sufficient resources are made available to implement and operate the NG9-1-1 system.

TARGET AUDIENCE: 9-1-1 and Public Safety Authorities, Legislatures and Governors' Offices

JURISDICTION: Federal/State/Local

BACKGROUND: Current State and local 9-1-1 funding and planning legislation and authority are functionally tied to the architecture of the current 9-1-1 system and state or local public safety operations. Existing laws or authority often do not take into consideration the Next Generation of 9-1-1 in which 9-1-1 will be an application that utilizes Emergency Services IP Networks (ESInets), along with other emergency services functions.

DISCUSSION: The 9-1-1 system and other emergency communications functions are funded by different and disparate funding sources. Those funding structures are used, and indeed are typically required to be used, to create separate and distinctly different systems (e.g. 9-1-1; interoperable Police/Fire/EMS radio systems; public health alert networks, poison control centers etc). Absent significant inter-governmental cooperation, this form of planning and funding may not lead to economies of scale that will enable parity of emergency services capabilities, interoperability, increased efficiency or cost savings within all aspects of emergency communications. More so than today, the Next Generation System will be a shared system comprised of multiple entities and components, including 9-1-1, the support of which will require coordinated planning and funding.

ACTION PROPOSED TO RESOLVE ISSUE:

- State and local governments should examine funding, operations, and legislation to ensure they promote the needed ESInets and cooperation, including interstate ESInets and NG9-1-1 in general.
- Any fees assessed to enable NG9-1-1 imposed on end users or devices of any service or infrastructure with the ability to access the NG9-1-1 system should be reasonable, equitable and nondiscriminatory;
- Fee remittance should be made for deposit into a dedicated fund and the allowable uses should ensure the provision of the needed services and constrain diversion of funds to other non-allowable purposes;
- Establish a maximum fee, providing the 9-1-1 authority with the ability to adjust the fee rate based on the cost to provide service;
- It is possible to pay for NG9-1-1 services as part of a shared NG emergency services network in which multiple emergency services functions will pay a portion of the network costs and policy makers should explore and examine this possibility.
- State and federal legislation and grant programs should reflect the growing convergence and integration of emergency response technology and agency interaction. State interoperability plans and federal funding in support of them must be for overall next generation emergency communications, including NG 9-1-1.

- Federal and state interoperability and Next Generation 9-1-1 definitions need to be more comprehensive and inclusive, e.g., all emergency response agencies, including 9-1-1, and all forms of emergency communications. As state and federal policy officials review and modify current 9-1-1 related policies; all definitions should be reviewed to align with next generation technology.
- Funding legislation should encourage parity of emergency services capabilities, interoperability, increased efficiency or cost savings within all aspects of emergency communications.
- Fee should be based on sound planning that includes short- and long-term projections of recurring and non-recurring costs and revenues;
- Service provider fee remittances should be audited for accuracy, and the 9-1-1 authority or PSAP should be audited or monitored for use of funds in compliance with legislative and authorized intent.

NEXT GENERATION PARTNER PROGRAM
NG9-1-1 TRANSITION POLICY BRIEF

NUMBER: Three

SUBJECT: Establishing State-Wide Emergency Services IP Networks (ESInets)

OBJECTIVE: Ensuring that State/Regional/Local authorities recognize the need and apply directive influence to enable and initiate state-wide ESInets needed for NG9-1-1

TARGET AUDIENCE: 9-1-1 and Emergency Services Authorities, Legislatures, Regulatory Agencies and Governors' Offices

JURISDICTION: State/Regional/Local

BACKGROUND: Most current 9-1-1 and emergency communications systems are local or regional in nature, both operationally and technically. However, the proposed technical architecture of the NG9-1-1 system indicates the need for state-wide management and coordination of IP emergency service networks (ESInets). In addition to technical specifications, the NENA **Functional and Interface Standards for Generation 9-1-1 (i3)** provides some guidance on Roles and Responsibilities for ESInets. There are two key aspects to the deployment of ESInets: (1) the physical buildout and coverage of the ESInets and (2) the management and coordination of ESInets.

ESInets may be deployed at a state level and there may be increased efficiencies and economies of scale in doing so. However, ESInets will very likely be deployed at a sub-state level (regional/county) in many areas which must then be interconnected with other sub-state ESInets to establish a standardized, interconnected and interoperable state-wide ESInet. In practice there will be a number of different ways to effect statewide ESInet coverage. A state level entity or organization is recommended to implement and manage the interconnected state-wide ESInet (comprised of the interconnected regional/local IP networks or a single state network). A state level entity or organization can play a significant role by providing an IP backbone network to make interconnection of regional/local ESInets more efficient.

No matter who manages the ESInet(s) in a state, it is desirable to have one entity or organization coordinate development and management of the network in order to ensure adherence to appropriate standards and achieve the economies of scale and efficiencies that NG9-1-1 promises. To further improve efficiency, one entity per state should be responsible for arranging interconnect between their network and adjacent state networks. This includes both redundant physical connections and router configuration to allow seamless interagency communications.

Local and regional 9-1-1 operations will continue to be handled at the current entity level.

DISCUSSION: ESInets are critical to the NG9-1-1 and next generation emergency communications architecture. They will provide call routing, transport, interoperability, security, and related services that can most effectively and efficiently be coordinated at the state level and facilitate required intra and interstate connectivity that will be very difficult, if not impossible, to achieve at the regional or local level.

State-wide ESInets are more than just physical pathways. They host (or provide access to) numerous application layer services that support interoperability among the highly diverse regional/local networks and agency applications. These include appropriate standardized core services such as GIS-based directories of authorized organizations and resources, and access control/identity management for implementation of information sharing policies. These directories will enable interstate and intrastate dissemination and queries for emergency incident information and messages, including references to locations, agencies and data sources. All authorized organizations (local, state, national, public, private) need to be able to implement their data policies through these core services. The ESInets may also offer optional managed services (or access to them) for use by individual agencies.

While there are numerous statewide programs in place for the funding and administration of 9-1-1 service and other emergency services, no state today is implementing and operating a comprehensive ESInet shared by 9-1-1 and other emergency services and government functions. Some have state networks for specific emergency functions (e.g. Indiana has an innovative statewide wireless 9-1-1 network; there are many state Health Alert Networks; law enforcement networks including NCIC and NLETS). Some states do not have the ability or authority to establish a state-wide ESInet. Some states do not have a state-wide 9-1-1 authority. Most states do not have a comprehensive state emergency communications agency, or if they do have one, the agency does not have the authority or funding to implement an ESInet and carry out these comprehensive new responsibilities involving all emergency response agencies, including coordination with state and local agencies or organizations responsible for 9-1-1.

ACTION PROPOSED TO RESOLVE ISSUE:

- Policymakers at all levels should commit to the development and deployment of interoperable state-wide ESInets as a fundamental 9-1-1 and emergency communications policy objectvive.
- 9-1-1 and emergency services authorities need to review existing legislation and regulations to ensure there are no barriers to, and sufficient authority for, the establishment of state-wide ESInets. Statutes and regulations to enable Next Generation systems should be actively pursued. Any current rules that would prohibit, or fail to authorize, the establishment NG9-1-1 must be resolved.
- Where existing state statutes and regulations permit, state, regional, and local 9-1-1 and emergency services authorities should work cooperatively toward establishing state-wide ESInets.
- Where not currently authorized, states should affirmatively legislate, authorize, organize and fund state-wide ESInets and key interoperability services hosted on, or accessed by them. It is in the operational and financial interests of emergency agencies to share and contribute to an ESInet. Planning and funding should involve and come from all emergency services, including but not limited to 9-1-1. The federal government should support efforts to establish state-wide ESInets.
- Emergency services agencies need to consider the sharing of infrastructure with other governmental entities as a matter of affordability. This calls for the development of new cooperative working agreements between federal, state and local agencies to participate in shared state backbone networks that include priority access for emergency services, particularly during periods of disaster.

NEXT GENERATION PARTNER PROGRAM
NG9-1-1 TRANSITION POLICY BRIEF

NUMBER: Four

SUBJECT: Addressing Transitional Regulation/Legislation/Tariff Modifications to Enable Next Generation 9-1-1 Deployment

OBJECTIVE: Modify and update current legislation, regulations and tariffs to ensure a competitive E9-1-1 environment and a transition to a full NG9-1-1 system

TARGET AUDIENCE: 9-1-1 and Public Safety Authorities, State Legislatures and Regulatory Agencies and Governors' Offices, Federal Communications Commission, Congress

JURISDICTION: Federal, State and Local

BACKGROUND: As compared to the current marketplace where Incumbent Local Exchange Carriers (ILECs) are the predominate 9-1-1 System Service Providers (SSPs), in the NG9-1-1 marketplace it is anticipated that there will be multiple providers offering a variety of service capabilities and options, thereby providing greater choices for 9-1-1 governing authorities. As we transition to a full NG9-1-1 system, it is also expected, and is indeed a policy objective, that competitive alternatives for current E9-1-1 services will emerge as well. An open, competitive E9-1-1 environment should be fostered and should be done so with an eye towards a full NG9-1-1 system.

NG9-1-1 is not simply an extension of E9-1-1. While a full NG9-1-1 system must support all E9-1-1 functions and features, NG9-1-1 is Internet Protocol (IP) based, and software and database controlled in fundamentally new ways, enabling many new technical and operational capabilities to further enhance the coordination and delivery of emergency services nationwide. However, before and during the transition to a full NG9-1-1 system, it is expected that new E9-1-1 service offerings will be provided by competitive 9-1-1 SSPs in direct competition with incumbent SSPs. Such offerings will likely replicate current E9-1-1 functions and advance beyond current E9-1-1 system capabilities, while, initially, not being a full NG9-1-1 system. In many cases, competitive SSPs will offer individual components of 9-1-1 solutions. As these competitive E9-1-1 service offerings and full NG9-1-1 capabilities are deployed, they will necessarily involve new complex technical and business arrangements that current regulations and laws did not fully contemplate.

DISCUSSION: NG9-1-1 will not be deployed in a "flash cutover". There will be PSAPs and areas that remain tied to the legacy E9-1-1 system for quite some time that must be able to interoperate with PSAPs that have migrated to NG9-1-1. With that reality in mind, it is imperative that 9-1-1 authorities at every level – as well as industry – begin now to lay the foundation for NG9-1-1 by facilitating the deployment of "dual-mode" capabilities in networks and/or IP-enabled PSAPs that can translate between the legacy, circuit switched environment and the next generation environment. This will be a significant issue as NG9-1-1 will not be deployed as a single nationwide project. It will take several years to complete the transition.

Much of the legislative and regulatory framework governing the provisioning, operation and maintenance of PSAPs, and the 9-1-1/emergency communications system that serves PSAPs, rests with state and local governments, and as such, varies greatly across the country. Additionally, the Federal Communications Commission plays a significant role in regulating communications providers

and its current rules that require the delivery of wireless and Voice over IP (VoIP) 9-1-1 “calls” over the “wireline E9-1-1 network” which could be argued does not clearly include the routing of 9-1-1 calls via an IP-based NG9-1-1 system. These state and federal laws and regulations were written in an era where all the possibilities and technological capabilities of NG9-1-1 simply did not exist. Similarly, the United States Congress plays a significant role in regulating communications providers and establishes the national regulatory framework through federal statutes. Many existing laws, regulations and tariffs make specific reference to older technologies or system capabilities which may inadvertently inhibit the migration to NG9-1-1. To foster the rapid migration of NG9-1-1, it is essential that state and federal legislatures and regulatory bodies review current laws and regulations to keep pace with the rapidly changing public safety marketplace and to create a framework which will optimize 9-1-1 governing authority choices and establish a competitively neutral marketplace that allows 9-1-1 authorities to replace legacy 9-1-1 functions component by component.

ACTION PROPOSED TO RESOLVE ISSUE:
To meet the objective of a fully functioning next generation 9-1-1 and emergency communications system, it is critical that state regulatory bodies and legislatures, as well as the FCC and Congress take timely and carefully considered action to analyze and update existing 9-1-1 rules and regulations to ensure they optimize 9-1-1 governing authority choices for E9-1-1 and NG9-1-1 and foster competition by establishing a competitively neutral marketplace.

- State legislatures and regulatory bodies, as well as the FCC and Congress, must initiate efforts to understand how current regulations and laws facilitate, or inhibit, the local, state, regional and national interoperable environment of NG9-1-1, and analyze how such rules and regulations may need to be modified to enable the IP-based, software and database controlled structure of NG9-1-1.
- State legislatures and regulatory bodies, as well as the FCC and Congress, are encouraged to take appropriate steps to enable competition for the delivery of E9-1-1 service that will provide increased opportunities and choices for 9-1-1 governing authorities today. Simultaneously, as such rules are considered, states must ensure that any regulatory actions will effectively enable the transition to a full NG9-1-1 system.
- Some example regulatory/legislative issues that must be addressed include:
  - Laws/regulations concerning the eligible use of 9-1-1 funds
  - Provisions that require specific technology components for "E9-1-1" service delivery that are not necessarily the same for NG9-1-1.
  - Laws which may inhibit appropriate and efficient information sharing of 9-1-1 data with appropriate safeguards for privacy protection. For example, regulations/laws/tariffs may need to be modified to ensure that 9-1-1 authorities or new customer-authorized service providers should be entitled to receive relevant routing, location and other related 9-1-1 information in the possession of the incumbent service provider at reasonable rates and terms. Such information is essential to ensure an efficient and error free transition of service providers. Other examples may include sharing of emergency-related information between 9-1-1 and other emergency response organizations.Existing 9-1-1 service arrangements and tariffs which may inhibit enabling new entrants to make similar competitive services available on a component by component basis, where technically and operationally feasible. Unbundled tariff options should be made available in such a way that prices of each unbundled component reflect reasonable rates and terms.
  - Uniform requirements for all 9-1-1 service providers to meet accepted industry standards (reference to industry standards is necessary for service integrity).
- New competitive providers should be afforded reasonable and nondiscriminatory treatment equal to that of incumbent service providers by requiring comparable agreements and terms between all service providers.
- Where regulatory requirements are in place, such requirements should be functional and performance based without reference to any specific proprietary technologies, manufactures or service providers.

APPENDIX A

NENA Policy Statement on the Proper Balance and Timing of State and National Regulatory and Legislative Activities During the Transition to NG9-1-1

(April 2008)

The evolution from today's 9-1-1 service structure to tomorrow's IP-based Next Generation (NG) 9-1-1 system requires several major areas of simultaneous and interactive activities. A coordinated set of actions combining national, state, and local authorities is required to successfully accomplish critical preparations, development, testing and implementation of NG9-1-1. This must be done in a way that retains and expands the quality and effectiveness of 9-1-1 service through knowledgeable and cooperative efforts at all levels of government. We hope and expect that interested parties will participate on more than one level so that developments can be shared.

To meet the objective of a fully functioning next generation 9-1-1 and emergency communications system, it is critical that state regulatory bodies take timely and carefully scrutinized action to analyze and update existing 9-1-1 rules and regulations. Such actions should be designed to facilitate an appropriate competitive 9-1-1 landscape for current E9-1-1 functions while ensuring that new or modified rules and regulations will effectively enable the transition to a full NG9-1-1 system.

NG9-1-1 is not simply an extension of E9-1-1. While a full NG9-1-1 system must support all E9-1-1 functions and features, NG9-1-1 is Internet Protocol (IP) based, and software and database controlled in fundamentally new ways, enabling many new technical and operational capabilities to further enhance the coordination and delivery of emergency services nationwide. During the transition to full NG9-1-1, it is expected that new 9-1-1 service offerings will be provided by incumbent and competitive 9-1-1 System Service Providers (SSPs) that advance beyond current E9-1-1 system capabilities, but simply advancing beyond today's capabilities should not be equated with providing a full NG9-1-1 system. Such efforts may better be characterized as "pre-NG9-1-1". These pre and full NG9-1-1 capabilities will necessarily involve new complex technical and business arrangements that current regulations and laws did not fully contemplate. Thus, states are encouraged to actively consider appropriate steps to enable appropriate competition for the delivery of E9-1-1 service that will provide increased opportunities and choices for 9-1-1 governing authorities today. Simultaneously, as such rules are considered, states must ensure that any regulatory actions will effectively enable the transition to a full NG9-1-1 system.

As states contemplate rule changes, it is critical that steps taken are in accordance with complementary national activities, many of which are being coordinated as a NENA NG9-1-1 Project through the work of NENA committees

and the NENA Next Generation Partner Program, and through federal government efforts such as the USDOT Next Generation 9-1-1 project. National progress on technical and operational standards development is progressing. Proof of concept trial demonstrations and testing of many aspects of NG9-1-1 are occurring in 2008, the results of which will be compared and analyzed against current expectations and assumptions. NG9-1-1 funding model analysis is progressing. Discussions on the need for proper certification of all aspects of the NG9-1-1 system are ongoing. These and other activities being worked at the national level are the building blocks required to accomplish a fully featured, standards based NG9-1-1 system. Any state regulatory actions concerning NG9-1-1 should appropriately consider ongoing national activities. However, states should actively engage stakeholders today to prepare and plan for the implementation of a full NG9-1-1 system.

In sum, the evolution to an NG9-1-1 system should be treated as a national project in which individual state action is necessary, but must be appropriately coordinated with other state and national activities. While national and international technical and operational standards for NG9-1-1 are still in progress, and much work remains to be done to complete this critical work, many activities can and should be undertaken at the state and local levels to prepare. Chief among these is working to understand how current regulations and laws facilitate, or prohibit, the local, state, regional and national interoperable environment of NG9-1-1, and analyzing how such rules and regulations may need to be modified to enable the IP-based, software and database controlled structure of NG9-1-1.

APPENDIX B

What is NG9-1-1?

Introduction
The evolution of emergency calling beyond the traditional voice 9-1-1 call has caused the recognition that our current E9-1-1 system is no longer able to support the needs of the future. Next Generation 9-1-1 (NG9-1-1) networks replace the existing narrowband, circuit switched 9-1-1 networks which carry only voice and very limited data. Currently there are difficulties in supporting such things as text messages for emergencies, images and video (including support for American Sign Language users), and easy access to additional data such as telematics data, building plans and medical information over a common data network. In addition, the need for inter-communications across states, between states, and across international boundaries requires that we create a more flexible 9-1-1 system design with much greater data handling capabilities. A highly standardized system is essential and critical to seamlessly support communications and data transfer across county, state, and international borders, and across the multitude of emergency response professions and agencies, from traditional PSAPs to Poison Control Centers, trauma centers, Coast Guard, and disaster management centers. There will be numerous and varied steps toward the new system named NG9-1-1, and vendors are already referring to their products as aimed at, enabling, or being wholly NG9-1-1 compliant. Vendors who have direct experience with parts of today's E9-1-1 system and service, and who are directly involved in NENA and other standards development can and are starting to produce NG9-1-1 oriented products. The direction of the Standards that will support NG9-1-1 is becoming clear, and demonstrations and trials are beginning to appear and will contribute to continued standards development. Despite this progress, a fully featured, truly "standards based" NG9-1-1 system is not yet identifiable, because the necessary standards are still in development. As a result, a summary definition of NG9-1-1 as a system and service process is needed to clarify what is involved.

NG9-1-1 Summary Definition
NG9-1-1 is a system comprised of hardware, software, data and operational policies and procedures briefly described below, to:

- provide standardized interfaces from call and message services
- process all types of emergency calls including non-voice (multi-media) messages
- acquire and integrate additional data useful to call routing and handling
- deliver the calls/messages and data to the appropriate PSAPs and other appropriate emergency entities
- support data and communications needs for coordinated incident response and management
- provide a secure environment for emergency communications

The basic building blocks required for NG9-1-1 are:

- **Emergency Services IP Network (ESInet)**
  ESInets use broadband, packet switched technology capable of carrying voice plus large amounts of varying types of data using Internet Protocols and standards. ESInets are engineered, managed networks, and are intended to be multi-purpose, supporting extended Public Safety communications services in addition to 9-1-1. NG9-1-1 assumes that ESInets are hierarchical, or a `network of networks' in a tiered design approach to support local, regional, state and national emergency management authorities.

- **International Standards Compliant IP Functions**
  Internet Engineering Task Force (IETF) based IP protocol standards provide the basic functionality of the system. NENA has applied standards from IETF and other Standards Development Organizations to specific NG9-1-1 requirements. Examples are: Location

Validation Function (LVF) and Emergency Call Routing Function (ECRF) and other functions, as defined in NENA 08-002, [IP] Functional and Interface Standards for NG9-1-1 (i3). This NENA Standard defined the core IP functionality of the larger NG9-1-1 system.

- **Software Services/Applications**
  NG9-1-1 uses service oriented architecture, software applications and data content to intelligently manage and control its IP based processes. NG9-1-1 is software and database driven to enable an exponential increase in available data and information sharing possibilities. It also provides flexibility and individual agency choice to determine information needs based on predetermined business/policy rules.

- **Databases and Data Management**
  NG9-1-1 uses a set of database systems to house and provide management of the above data content. Some examples are: validation, routing control, policy/business rules, and system-wide detail call records. (reference: pending NENA NG9-1-1 Data standards)

  NG9-1-1 provides the mechanisms to access external sources of data, either automatically or manually, via the ESInet, to support more knowledgeable and efficient handling of emergency calls/messages. Examples: telematics/ACN data, hazardous material information, building plans, medical information, etc.

- **Security**
  NG9-1-1 provides extensive security methods at the hardware and software levels to replicate the privacy and reliability inherent in E9-1-1 services.

- **Human Processes**
  NG9-1-1 as a service system involves a multitude of human procedures and system operations procedures to control and monitor the functionality and effectiveness of the systems and services that provide NG9-1-1 service. Examples include database establishment and maintenance procedures, IP network operations, security processes, trouble shooting procedures, database auditing and accuracy validation procedures.

NENA's Role

NENA is an organization chartered to represent both public safety and the 9-1-1 industry, present and future, in its mission to focus on the development, evolution, and expansion of emergency communications. NENA is the organization responsible to define NG9-1-1, and to coordinate the development and support of NG9-1-1 as a system and a service to the public, the industry, and to Public Safety entities.

In the past, this has been about 9-1-1 exclusively, but the future involves a more `virtual' approach to how the public and governmental entities accomplish emergency communication through NG9-1-1. Text devices don't `dial' 9-1-1, for example, but use a different form of identification to access the system and achieve delivery to PSAPs and other entities. However, the basic processes and service needs are the same, no matter what `code' is used. The conceptual base of NG9-1-1 is international in scope, designed to support all emergency codes, such as 9-1-1, 1-1-2, 1-1-1, and all others among the 62 access codes (at last count) used around the world. Other communications and data exchange functions that will be considered part of an NG9-1-1 system won't use any such access codes, but will access ESInets as necessary to communicate seamlessly across local, State, regional, international boundaries.

What development and support areas does NENA focus on for NG9-1-1?
(Other organizations may be involved)

Role	NENA	Vendors	Local Gov	State Gov	Fed'l Gov
Defining requirements to meet E9-1-1 and NG9-1-1 needs	X				
Defining new NG9-1-1 functions and features to expand emergency communications capabilities	X	X	X		
Defining interface and functional standards for NG9-1-1 and its subsystems	X				
Defining NG9-1-1 database content standards	X				
Defining detailed product designs for NG9-1-1 subsystems		X			
Defining detailed operations procedures for individual NG9-1-1 subsystems		X			
Defining overall NG9-1-1 system operational procedures	X		X		
Developing methods to ensure a secure environment	X	X			
Defining best practices for how to utilize NG9-1-1 features and functions	X				
Ensuring that local, state, federal and tribal statutes, regulations and overall policies enable, rather than prohibit, NG9-1-1	X		X See note below	X	X
Defining recommended transition processes to move from today's 9-1-1 systems to NG9-1-1	X				
Providing a means for Certification and Accreditation	X				
Ensure that products adhere to defined standards to allow interoperability through open architecture		X			

Note: Local Government has two roles – funding management and public safety operations

NG9-1-1 – Are we there yet?
Fully featured, standards based NG9-1-1 will likely be implemented in successive releases; but unless it's a full replacement for existing E9-1-1 functions2, including additional features to bring 9-1-1 service up to the level needed in today's emergency communications environment, it is not a true "next generation" of 9-1-1. True NG9-1-1 will include the ability to support interactive text messaging, policy-based routing using location and several other factors, such as call type, target PSAP status, network status, and automatic acquisition of supportive data and its use within the system to control routing and other actions prior to delivery to the PSAP, and many other standards defined features and functions.

When a newer, IP based replacement for E9-1-1 meets or exceeds the capability set above, it will achieve fully featured NG9-1-1. Note that this is not about having all possible originating service types implemented, but that the NG9-1-1 capabilities defined above are present, tested (to the extent possible, which may be limited to lab testing if there are no live instances of any given capability) , and ready for service. If a given IP-based system is not capable of all initial NG9-1-1 features and functions, it can certainly be considered to be on the path to full NG9-1-1, but is still pre-NG9-1-1 in nature.

APPENDIX C

Related NG9-1-1 Policy Informational Documents

Next Generation 9-1-1 - Responding to an Urgent Need For Change: Initial Findings and Recommendations of NENA's NGE9-1-1 Program (March 2006)
- Available at http://www.nena.org/media/File/ng_final_copy_lo-rez.pdf

Transitioning Emergency Communications Into the Next Generation: NENA Next Generation Partner Program 2006 Report (March 2007)
- Available at http://www.nena.org/media/File/2006NGPartnerProgramReport_1.pdf

Summary of NG9-1-1 Development and NG Partner Program Results for 2007 (May 2008)
- Available at http://www.nena.org/media/File/2007NGPartnerProgramfinalreport.pdf

Funding 9-1-1 Into the Next Generation: An Overview of NG9-1-1 Funding Model Options for Consideration (March 2007)
- Available at http://www.nena.org/media/File/NGFundingReport.pdf

United States Department of Transportation Next Generation 9-1-1 Initiative
- Numerous documents available at http://www.its.dot.gov/ng911/ng911_pubs.htm

9-1-1 Industry Alliance (9IA) 2008 Study on the Health of the US 9-1-1 System (March 2008)
- Available at http://www.911alliance.org/publications/download_report.cfm

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NATIONAL EMERGENCY NUMBER ASSOCIATION
4350 North Fairfax Drive, Suite 750
Arlington, VA 22203
1-800-332-3911