

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications)	PS Docket No. 11-153
)	
Framework for Next Generation 911 Deployment)	PS Docket No. 10-255
)	
Legal and Statutory Framework for Next Generation 9-1-1 Services Pursuant to the Next Generation 9-1-1 Advancement Act of 2012)	PS Docket No. 12-333

COMMENTS OF L.R. KIMBALL

L.R. Kimball, a CDI Company, of Ebensburg, Pennsylvania hereby submits comments in response to the Federal Communications Commission’s (Commission) *Proposed Rule* released by the Commission on November 13, 2012, in the above captioned proceeding.

L.R. Kimball is one of the nation’s largest engineering/architecture/consulting firms, annually ranked among the top 200 design firms and the top 20 telecommunications firms by Engineering News Record. L.R. Kimball’s Communications Technology Division has offered public safety and mission critical consulting services for more than 15 years. Our communications technology practice is focused on all facets of public safety, supporting operations and technologies; 9-1-1 networking, call delivery and call handling; radio communications; cyber security; and public policy.

L.R. Kimball addressed many of these questions in previously filed Comments regarding PS Docket No. 10-255 and PS Docket No. 11-153 in response to the *Notice of Inquiry* adopted by the Commission on December 21, 2010 and the Commission’s *Proposed Rule* published in the Federal

Register on October 12, 2011. We are pleased to refresh the record in these matters.

COMMENTS

I. Legal and Regulatory Framework for the Development of NG9-1-1 Services and the Transition from Legacy 9-1-1 Networks to NG9-1-1

The Commission asked if Congress should create requirements or incentives for states to establish NG9-1-1 oversight bodies at the state or regional level. Federal policy, as reflected in existing 9-1-1 statutes and regulations, promotes and/or requires statewide planning and coordination and specifically recommends the establishment of a state entity to lead such planning and coordination. Other federal statutes and regulations that govern public safety interoperability grant programs also establish the principle of statewide planning and coordination. L.R. Kimball views the policy direction coming from the federal government to be clear in this regard.

L.R. Kimball recommends that Congress continue in this policy direction and require each state that does not already have a statewide 9-1-1 coordinator and oversight body to create one. In making this recommendation, we want to be clear: we are not advocating that states “take over” 9-1-1 services in states where said services are provided at local initiative and operation. We are advocating that all states have an effective mechanism to ensure interconnectivity between locally- or regionally-initiated NG9-1-1 systems and to bring NG9-1-1 to geographic areas that are not served by one of the local/regional systems. From a planning, funding and coordination perspective, we envision a mutually supportive arrangement in which all parties understand and strive toward the goal of achieving statewide coverage in a manner that is technologically and operationally feasible.

Congress could require each state determine the appropriate level of readiness for the state and report on how they plan to deploy; at a state level, regional level or other. This will allow for the states to develop systems where appropriate to ensure interoperability between regions.

The Commission seeks comment on whether each state or region should designate an organization to be responsible for planning, coordinating, and implementing the NG9-1-1 system in that particular state or region. L.R. Kimball believes that NG9-1-1 coordination at the state level is important. Many states have established state-level 9-1-1 programs, but there is considerable diversity in the nature, organization and scope of those programs. Some states have made provision for limited statewide coordination, some programs are simply advisory, others can coordinate only on specific technologies (i.e. wireless), while yet others have full responsibility for planning, coordinating and funding their respective state 9-1-1 systems.

The historical record reveals that states that provided some level of coordination and oversight in the deployment of wireless E9-1-1 were more successful than those that did not. The body of work that has been done at the national level is clear about the nature of NG9-1-1: it involves interconnection to a degree that ultimately will result in a nationally interoperable ESInet with functionality far beyond the capability of today's E9-1-1 systems. The level of coordination and partnership this will require simply cannot come about on its own. Statewide planning and coordination mechanisms must be in place or it will not happen.

The Commission requested comment on whether the formation of state or regional oversight bodies better ensure adherence to a standardized architecture that facilitates greater levels of functionality. The answer is yes, *but* the State has to set and enforce the standards for interconnectivity and interoperability between disparate regional systems.

The Commission asked if the existence of state or regional oversight bodies would enable PSAPs to procure equipment and software at lower costs. A state or regional oversight body would enable PSAPs to procure equipment and software at lower costs if there was a state or regional procurement process that leveraged economies of scale.

The Commission asked whether a specific federal agency or agencies should be responsible for establishing national policy to ensure consistent regulation of NG9-1-1. L.R. Kimball is of the opinion

that a single federal entity could not be established to oversee the transition to NG9-1-1. There are simply too many components involved in NG9-1-1 for centralized federal government involvement. One agency could not take on all aspects of NG9-1-1.

However, an entity should be established to coordinate efforts among federal agencies; it is L.R. Kimball's recommendation that the National E-911 Implementation and Coordination Office (ICO) established by the Ensuring Needed Help Arrives Near Callers Employing 911 Act of 2004 (ENHANCE 911 Act) be given this responsibility.

The Commission requested comment on what statutory or regulatory changes, if any, would be necessary for the Commission, other federal agencies, states, Tribes, or localities to facilitate and oversee NG9-1-1. L.R. Kimball believes that the Federal government should exert its authority in a positive manner that is beneficial to the advancement of 9-1-1 as a whole. The Federal government should not tell states what to do and what not to do, rather, it should develop models for cooperative agreements and establish rules, as with wireless E911, to require such things as specific location standards and to promote open, shared network policies to ensure that NG9-1-1 is not prohibited in any way by outdated policies.

L. R. Kimball recognizes that NG9-1-1 is significantly different than E9-1-1 in scale and scope, and therefore recommends that federal, state, and local governments adopt statutory and regulatory changes that properly facilitate and oversee NG9-1-1. This includes adopting statutes and regulations that provide a state-level authority; support open, shared networks; provide that the implementation of NG9-1-1 be kept at the appropriate level; and provide for the needs of local PSAPs.

The Commission should review its requirement that all 9-1-1 calls be routed to the "geographically appropriate" PSAP to ensure that nothing prevents 9-1-1 calls from being intelligently routed to the appropriate PSAP, even if it is not the geographically closest PSAP. The reason has to do with the new capability local 9-1-1 authorities will have to configure their systems

to route calls differently based on call type, e.g, calls from non-English speakers or from non-human-initiated devices.

The Commission asked about the feasibility of deploying a national NG9-1-1 infrastructure that would allow PSAPs to connect to a nationwide ESInet, prior to the deployment of statewide or regional ESInets. L.R. Kimball supports the concept of an early deployment of a national NG9-1-1 infrastructure. Doing so would establish IP addressing and protocol standards, and interconnection and security arrangements up front, so that state or regional level NG9-1-1 networks can build to those standards at the outset rather than have to change their local infrastructures later. This should result in a quicker and less costly deployment of NG9-1-1 nationwide.

One of the advantages of IP networks is the flexibility in how they can grow and interconnect, as has been demonstrated by the growth of the public Internet. From an IP perspective, deployment of a National NG9-1-1 infrastructure should be feasible and should not introduce special difficulties. Indeed, the existence of a national NG9-1-1 infrastructure would impose a structure on state-level or regional networks that would likely be less difficult than attempting to merge diverse state-level IP networks later.

A non-exhaustive list of topics that must be taken into consideration for a national NG9-1-1 infrastructure include:

1. IP address space management
2. NG9-1-1 applications and standards
3. Interactions between the national infrastructure and individual PSAPs (If PSAPs directly connect to the national network) and impact on state efforts
4. Security considerations.

Considering each of these topics in turn:

1. IP address space management: The first question is whether a national NG9-1-1 IP infrastructure should support IPv4, IPv6, or both. Unfortunately, as of today, there is limited

IPv6 support among NG9-1-1 applications, although most vendors have committed to provide IPv6 support in the near future. If a national NG9-1-1 network is deployed quickly, there would be much pressure to support IPv4, at least for several years. However, a national NG9-1-1 network could be used to drive IPv6 deployment. The SIP protocol upon which NG9-1-1 applications are based does not lend itself to mixed IPv4 and IPv6 deployments, particularly in the high reliability world of public safety. This is because SIP, which is basically an application layer (layer 7) protocol, is layer 3 (the IP layer) aware. SIP messages include IP addresses, and SIP expects IP endpoints to be able to communicate directly with each other via IP. In L.R. Kimball's opinion, in the NG9-1-1 world, IPv4 and IPv6 NG9-1-1 networks must be maintained as entirely separate NG networks. The only safe and reliable method to interconnect the IPv4 and IPv6 NG9-1-1 SIP networks is via a Back-to-back User Agent device, sometimes called a Session Border Controller (SBC), which terminates a call in one IP address space and regenerates the call in the other address space.

Expense, complication, and unexpected failures would be the likely result of any other type of mixed IPv4 / IPv6 NG9-1-1 deployment, and L.R. Kimball warns against a mixed IPv4 / IPv6 national deployment. While national dual IPv4 and IPv6 networks are a possibility, and an IPv4 national network might provide some public safety benefits for non-call delivery applications, L.R. Kimball's position is that a national NG9-1-1 call delivery network should be deployed using IPv6 only. If interconnection to an IPv4 state or regional NG9-1-1 network is required, then that interconnection would be via an appropriate SBC. To the extent that an IPv4 network is deployed nationally, there will be issues with IPv4 address space allocations, and whether private (as in 10.x.x.x) or public IP addresses should be utilized. L.R. Kimball has already encountered problems with state-level ESInets where the exclusive use of public IPv4 addresses (as a service provider policy) has imposed serious limitations on PSAP ESInet address allocations, which have constrained the architectures of

NG9-1-1 solutions at the PSAP in undesirable ways.

2. NG9-1-1 applications and standards: Deployment of a national NG9-1-1 infrastructure should include some level of standardizations protocols to insure interoperability with state, regional, local, and even PSAP solutions. L.R. Kimball supports the use of the IETF and NENA NG9-1-1 standards wherever applicable, particularly the NENA “i3” solution, version 2 of which is nearly ready for publication. Many public safety vendors are working towards i3 compliance, and number of i3 products are already available and have been deployed. NENA i3 is the NG9-1-1 protocol with which many stakeholders have had the most experience. The fact that V2 of this standard is nearly ready for publication is in part the result of lessons learned during early deployments. This standard also has the advantage of being open and freely available, as are IETF standards.

An issue that needs to be considered for a national NG9-1-1 deployment is which NG9-1-1 applications should be provided by the national infrastructure. L.R. Kimball anticipates that a national infrastructure should provide at least location-based call routing down to the state level, and perhaps further if regional, local, or even individual PSAPs interconnect to the national network.

3. Interactions between the national infrastructure and individual PSAPs (If PSAPs directly connect to the national network) and impact on state efforts: A number of state and/or regional NG9-1-1 efforts are deploying so called “hosted” 9-1-1 solutions, a cloud-like approach where some 9-1-1 functions, which in the legacy world were deployed at the PSAP, have now been moved into centralized regional or state-level locations. As a general rule, interconnections between a national NG9-1-1 infrastructure and such regional or state-level NG9-1-1 solutions would have to occur at or in front of the centralized functions, and not behind those functions. If a PSAP chooses to directly connect to a national NG9-1-1 infrastructure, then the PSAP would have to provide local instances of the functions that

might otherwise be located in the regional or state-level cloud. Such an occurrence would not necessarily be a detrimental situation, but it might impact state and/or regional policies concerning NG9-1-1 deployments.

4. Security considerations: Any national NG9-1-1 deployment raises the stakes concerning NG9-1-1 infrastructure security. Of particular concern are satisfying mutual security arrangements between state or regional NG9-1-1 networks and a national network. Early deployment of a national NG9-1-1 infrastructure should result in early national standards for security arrangements. It should be easier for state, regional, or local NG9-1-1 networks to comply with national standards earlier rather than to have to retrofit such arrangements in the future.

With regard to liability protection, it should be expanded to cover any service or device capable of accessing 9-1-1. Additionally, current liability statutes should be modified to be technology-neutral and extend to all forms of information pushed to a PSAP or pulled from external sources by a PSAP, regardless of the platform over which information travels. More specifically, 47 U.S.C. § 615a3 should be amended to include protection when a party is using any device capable of placing a 9-1-1 request for emergency service. Changing terms to include NG9-1-1 will not be sufficient, as that term is likely to become outdated and not be all inclusive of 9-1-1 services in the future.

III. Recommendations for Removing Jurisdictional Barriers and Inconsistent Legacy Regulations

a. *Removal of State Regulatory Roadblocks to NG9-1-1 Services Development*

The Commission asked if incumbent 9-1-1 SSPs have sufficient incentives to upgrade their technology to support NG9-1-1 absent regulatory change at the state level. The current regulatory environment would need to change to enable the NG9-1-1 environment to become truly competitive.

Incumbent 9-1-1 SSPs do not have sufficient incentives to upgrade their technology or to interconnect and interoperate with new 9-1-1 SSPs. Numerous examples from across the nation illustrate this, many of which have become part of a Commission proceeding.

The Commission requested comment on whether Congress should encourage or require existing state regulations, laws, or tariffs to be modified to ensure that 9-1-1 governing authorities or new 9-1-1 SSPs are entitled to receive relevant routing, location, and other related 9-1-1 information at reasonable rates and terms. Revisions to or the elimination of older laws and tariffs would be necessary in order to require interconnections. Or, negotiations between incumbent 9-1-1 SSPs and competitive 9-1-1 SSPs would need to be incentivized. Either way, the 9-1-1 regulatory environments at both the federal and state level will need to be overhauled to promote competition. References to older technologies that could prevent the use of newer services and technologies in the NG9-1-1 environment will need to be replaced with technology-neutral language that promotes technological innovation and interconnectivity between different types of service providers.