



Joint Hearing of the Pennsylvania House and
Senate Veterans Affairs & Emergency Preparedness
Committees and the Senate Communications and
Technology Committee
FirstNet and Public Safety
October 19, 2017

Brian Hendricks on
Behalf of Nokia



Good afternoon Chairmen Vulakovich, Costa, Aument, Haywood, Barrar & Sainato, other Committee members and staff. My name is Brian Hendricks, and I am the Head of Technology Policy and Public Affairs for Nokia. I appreciate being invited here today to appear at this joint hearing and to provide insight from Nokia's perspective about FirstNet, the decision whether the Commonwealth should opt-in to the national network, and the ways in which Pennsylvania's prior and planned investment in public safety will position the Commonwealth moving forward.

About Nokia:

Nokia is an innovation powerhouse, offering unparalleled leadership in the technologies that connect people and things. Nokia is leveraging its strengths to create new types of network that are intelligent, efficient, and secure, and which will serve as a critical enabler of many capabilities and use cases associated with the Internet of Things (IoT). We are weaving together the networks, data, and device technologies to create the universal fabric of our connected lives. Our expertise in mobile and fixed communications network infrastructure and services, including public safety, is the reason we have been chosen by governments, carriers, and other industry partners around the world.

Nokia brings together, in one company, a full portfolio of wired and wireless broadband technologies, many of which are employed by state agencies, counties, utilities, and service providers here in Pennsylvania. Nokia has made pioneering advancements in reducing the footprint of mobile base station infrastructure, from compact yet full power macro sites down to the full range of small cell solutions, which are expected to be critical to enabling future deployment and IoT. Critically, with respect to public safety, Nokia provides long-haul microwave wireless transmission as well as IP routing and optical technology that enables shared networking across multiple agencies. We provide many of the enabling technologies upon which FirstNet is



built, namely, the wireless LTE network componentry and applications, including deployable assets. One such deployable is an Ultra-Compact LTE Backpack that can instantly standup a fully autonomous LTE network in hard to reach areas, such as the western Pennsylvania gamelands or the deep valleys of North Central Pennsylvania. These LTE backpacks could be leveraged by FirstNet to provide coordinated responses for search-and-rescue, disaster relief, and manhunt operations in rural areas. We are also testing this Ultra-Compact technology using aerial drone technology. Nokia stands ready to assist the technical deployment today and into the future.

Nokia and the Commonwealth:

Over eighteen years ago, the Commonwealth initiated a partnership with Alcatel-Lucent to construct and support the statewide communications backbone network otherwise known as StarNet. This backbone network is based on open standards, which means it is ready to interoperate with other open standard networks, making it an efficient use of funds to tie networks together rather than build separate networks. The StarNet backbone forms part of the Southwest Pennsylvania Emergency Services IP Network (“ESINet”) called “Westcore”, which connects fourteen 911 centers sharing services across that region. The StarNet backbone also connects parts of Lycoming County’s emergency services communications network. After acquiring Alcatel-Lucent, Nokia continued this network sharing activity with StarNet and other public entities across Pennsylvania.

Over the past ten years, Nokia (with Alcatel-Lucent now fully integrated into Nokia), has been engaged in the design and build out of 911 interconnectivity projects across the entire southern tier of Pennsylvania, connecting 911 centers in the Southeast, South Central, South Central Mountain, Northeast, and the Southwest regional network already mentioned. These blended microwave and fiber networks are an important investment by Commonwealth agencies and



Counties and will be an important asset to FirstNet should the Commonwealth opt-in, as Nokia recommends, to the national radio access network (RAN) being deployed by FirstNet. Reuse of existing assets will significantly reduce the costs of deploying and maintaining this network, which could directly translate into a broader FirstNet build out in Pennsylvania right out of the gate. With appropriate enhancements, StarNet and the existing regional ESiNets are an ideal asset for providing connectivity to FirstNet base station equipment.

The FirstNet Decision:

Nokia has a long history with the concept of an interoperable wireless network for public safety, being one of the earliest vendors to work with the newly constituted FirstNet. My own history with this issue is even longer. I was the Staff Director and General Counsel to the U.S. Senate Committee on Commerce, Science, & Transportation in 2009 and 2010 when serious consideration was being given to efforts to develop a nationwide, interoperable public safety network in fulfillment of what was, at that time, the last outstanding 9-11 Commission recommendation. As a principal architect of the legislative language that led directly to the creation of FirstNet in 2012, I can confirm for members that then, as now, the idea was to make use of as much previously deployed communications infrastructure as possible to develop a truly nationwide, interoperable public safety wireless network.

Although members of Congress gave serious consideration to the role of states in the construction of the network, and an opportunity to opt-out of the RAN deployment for a state was provided in the text, careful protections were included to ensure that the design of the system would be consistent, interoperable, and maintainable. Those are critical requirements to consider, and a major reason why when looking at the legislation, I believe it becomes clear that there was a strong preference for states to ultimately opt-in to the FirstNet provided framework.



Consider, for example, that Congress directed FirstNet to:

- Ensure that the result of its efforts would be a nationwide public safety broadband network based on a single, national network architecture;¹ and
- Ensure the development and use of nationwide standards;²

And, consider that Congress adopted a set of requirements to limit the flexibility of those states that did opt-out to build their own RAN network. The statute requires a state that chooses to opt-out to demonstrate that its RAN plan meets the minimum technical interoperability requirements adopted for the FirstNet provided network and work with the FirstNet provided core without causing problems.³ In addition to the technical interoperability requirements, Congress further limited state opt-outs by prohibiting grant funding for planning and access to spectrum rights to provide the radio network until a state could demonstrate that it has:

- The technical capabilities to operate the network;
- The ability to maintain ongoing interoperability with the FirstNet nationwide network;
- The ability to complete the project within a time frame comparable to the one offered by FirstNet for its proposed state RAN; and
- Provide comparable security, coverage, and quality of service as that of the FirstNet nationwide public safety network.⁴

Congress intended for the opt-out decision to be a carefully considered, and infrequently chosen option. It is easy to understand why. The benefits of the nationwide network are substantial for public safety while ensuring the long-term viability, interoperability, performance, and security of myriad state provided RANs will be a costly and time consuming effort for FirstNet personnel and government agencies.

Nevertheless, the law does permit a state the choice to opt-out of the FirstNet provided RAN.

¹ P.L. 112-96 § 6202 (a).

² P.L. 112-96 § 6206 (b)(1)(A).

³ P.L. 112-96 § 6302 (e)(3)(C).

⁴ P.L. 112-96 § 6302 (e)(3)(D).



While there may be reasons to consider this, and we are not here to argue the merits of those reasons, Nokia does not believe the Commonwealth of Pennsylvania should opt-out. In fact, we believe there are substantial benefits to opting in to the plan, as some 25 other states have already done. What are some of these reasons? To begin with, opting in to the FirstNet plan places Pennsylvania in a position where it has an entire commercial ecosystem, FirstNet, and government agencies as partners rather than regulators that are scrutinizing the design, construction, maintenance and operation of the state constructed RAN. A common platform and a shared relationship with other states will allow Pennsylvania public safety to benefit from lessons learned in other states. There are other key benefits to opting-in, including:

- **Innovation and cost.** Opting-in gives Pennsylvania public safety access to the entire ecosystem of innovative applications and devices. If the solution deployed by a state opting out of FirstNet varies substantially or involves proprietary technology or apps, the cost of developing new services and features will be considerably higher. This was a common feature of past public safety solutions.
- **Availability.** AT&T is a world-class operator with extensive experience and an existing network that can provide public safety with access very quickly while the FirstNet radio network is being built. Many states that have opted-in to the plan have cited the uncertainty about state budgets and the lack of predictability in state government that could make the enormous technical and financial undertaking of their own RAN very difficult;
- **Fewer challenges.** A state that elects to opt-out of the FirstNet RAN is not just responsible for constructing a RAN, they must manage their technology vendors to ensure that they stay current with developing standards and the devices and apps deployed by FirstNet and its partners. Planning for capacity growth and the best ways to ensure future investment without the benefit of FirstNet, AT&T and its full complement of partners, and lessons learned across the system is a very significant set of challenges.

For the foregoing reasons, while the Commonwealth of Pennsylvania could exercise its choice to opt-out of the FirstNet RAN, Nokia does not believe that you should. Pennsylvania has made substantial investment in public safety infrastructure over more than a decade, infrastructure that connects many sites across all 67 counties and provides an incredible



opportunity for the Commonwealth to quickly realize a first-responder wireless network backed by FirstNet and its provider, and one that could benefit from cost reductions by enhancing the existing network infrastructure resources.

Thank you for allowing Nokia to share our thoughts on this important initiative.