

State of Florida
Florida Department of Highway Safety & Motor Vehicles
Request for Information
RFI 021-14, Florida's FirstNet

1. Introduction

The Florida Department of Highway Safety and Motor Vehicles (DHSMV), in its capacity as the State of Florida's designated governmental body for coordination with the First Responder Network Authority (FirstNet), is issuing this Request for Information (RFI). This RFI is designed to gather information to assist the state in effectively planning for the deployment of an interoperable, public safety broadband network within Florida's borders to connect to the Nationwide Public Safety Broadband Network (NPSBN) core. Specifically, the RFI is designed to assist in identifying, planning, and implementing the most efficient and effective way to utilize and integrate necessary infrastructure, equipment and other architecture associated with the NPSBN to satisfy the current and future wireless communications and data and data network service needs of public safety within Florida. The Radio Access Network (RAN) and data network are necessary for Florida to connect to the FirstNet Core must effectively support fully interoperable, mission-critical, 700 MHz LTE wireless broadband data communications for all public safety agencies throughout the State of Florida and those that may respond from outside of the state to assist during times of crisis.

Responses to this RFI will be reviewed by the Department for informational purposes only and will NOT result in the award of a contract. Any request for cost information is for budgetary purposes only. Vendors submitting answers to an agency's Request for Information are not prohibited from responding to any related subsequent solicitation.

2. Background

FirstNet

In February 2012, Congress enacted the Middle Class Tax Relief and Job Creation Act of 2012. The Act included long-sought-after landmark provisions to create a much-needed nationwide interoperable broadband network to help police, firefighters, emergency medical service professionals and other public safety officials stay safe and do their jobs. Title VI of the Act establishes the First Responder Network Authority ("FirstNet") to ensure the construction and operation of a single nationwide public safety broadband network (NPSBN). The network core will be built and sustained by FirstNet. Each state/territory is responsible for assisting FirstNet in planning for its state's Radio Access Network (RAN) and data network. The RAN and data network are necessary to connect the state to the FirstNet Core and is expected to far exceed current private sector capabilities for similar technology. Florida's FirstNet RAN must effectively support the needs of all public safety agencies within the state's boundaries, while maintaining interoperability nationwide.

Florida

The State of Florida consists of 67 counties and is the fourth (4th) most populous state in the nation with over 19.3 million residents. There are 20 designated Metropolitan Statistical Areas (MSAs) within the state. The largest metropolitan areas in Florida are:

1. Miami (+5.5 million)
2. Tampa Bay (+2.7 million)
3. Orlando (+2.1 million)
4. Jacksonville (+1.3 million)

Florida is ranked 22nd of the 50 states in geographic size, covering a total of 65,755 square miles. Mean elevation is 100 feet with the highest elevation being 345 feet at Britton Hill in Walton County near the unincorporated community of Lakewood.

The state contains over 11,000 miles of highway, including over 1,400 miles of major highways and interstates (i.e. I-10, I-75, I-95, I-4 and Florida's Turnpike).

Florida has a significant number of critical infrastructure facilities, including major electrical generation and distribution plants, coal and nuclear plants, and petroleum refining facilities.

Combined, there are thousands of public safety agencies at the local, county, state, tribal, and federal levels that would be potential users of this network. Beyond the traditional law enforcement, fire and EMS first responders described above, this project would likely support non-traditional agencies such as those related to transportation, public works, and utilities (also known as Critical Infrastructure Industries, or CII). These agencies may be permitted to use the network on a secondary basis and would contribute to emergency response in the event of an incident that required their services, such as the clearing of roads or restoration of power.

Many public safety agencies within the State of Florida currently use data applications via vehicle mounted mobile data devices, ruggedized computers, as well as some handheld devices and smartphones. Some of these applications operate over legacy private Land Mobile Radio (LMR) networks, while a majority utilizes commercial 3G and 4G services. Applications in use today include, but are not limited to:

- Inter/Intranet Access
- Automatic Vehicle Location (AVL)
- Access to Local Networks via a Virtual Private Network (VPN)
- Computer Aided Dispatch and Records Management Systems
- Live Patient Status and Heart Monitoring (EKGs)
- Sharing of Reports and Photos
- Access to Criminal Database Information
- Automotive and Driver License Checks
- Critical Infrastructure Surveillance
- Weather Reports
- River-Level Monitoring
- Aerial and Scene Video
- Applications Supporting the Incident Command System (ICS)
- Incident Action Plan Documentation/Dissemination

- Intelligent Transportation System (ITS) applications, such as Traffic Cameras and Road Signage Messaging
- Geospatial Access for Mapping and Infrastructure Plans
- Systems Management/Monitoring Tools
- Public/Private Utility Access

In addition to the vehicle-mounted devices, users would also utilize handheld and tablet devices to access these types of applications as well as voice, text, VoIP, video services, and group communications. A statistical breakdown of the primary public safety entities in the State of Florida is listed below.

Law Enforcement and Corrections

Florida has approximately 427 law enforcement agencies and 207 prison/detention facilities. In 2012 there were a total of 40,733 law enforcement officers employed in various state and local agencies, including 17,179 local police officers, 18,673 county deputies, 3,743 state law enforcement officers, and 1,138 law enforcement officers employed by schools or ports. In addition, the state had a total of 28,727 correctional officers working in state, county, and private detention centers and prisons throughout the state.

Fire Service

Florida is home to over 470 full-time and volunteer fire departments and has approximately 25,000 certified firemen across the state. Fire officials responded to 62,992 fires in 2011 and millions more non-fire related calls for service.

Emergency Medical Services

In 2010, Florida had 272 licensed EMS providers operating throughout the state that answered nearly 3.3 million EMS incident calls for service. Call for service included nearly 2.9 million patient encounters with over 2.1 million persons being transported for further medical services. There are currently 37,425 Certified Emergency Technicians and 27,863 Certified Paramedics in the State of Florida.

3. Goals for Network

Florida envisions deploying a public-safety grade 700 MHz LTE wireless broadband data network that is ultimately capable of transporting data, video, and voice, and it conforms to both LTE standards and the architecture of the Nationwide Public Safety Broadband Network (NPSBN).

Florida considers the following features essential characteristics of this network:

- A. Coverage:** The proposed network is anticipated to provide uniform mobile coverage to 99% and uniform portable outdoor coverage to 95% of the outdoor geography of the State of Florida. Portable indoor coverage should extend to in-building, as well as subterranean environments, to the greatest extent practical. Mobile coverage should extend offshore to the greatest extent practical.

- B. Capacity:** The network must be capable of serving a minimum of 100,000 concurrently connected subscriber devices with the ability to double that figure over the next 10 to 15 years.
- C. Reliability:** The network must be designed for reliability equivalent to 99.999% network availability. Network components must be redundant and should be installed at geographically diverse locations. Site interconnections should be configured as self-healing rings or mesh architecture.
- D. Survivability:** Critical network nodes should include back-up power provisions, designed to survive the loss of commercial power for a minimum of 7 days. Network antennas should be designed to withstand 100 mph sustained winds (higher where required by local building code) and peak gusts of up to 150 mph throughout the state. Network infrastructure equipment installed in flood-prone locations must be installed to survive flooding conditions (e.g. tropical storms, hurricanes).
- E. Priority:** The network must be capable of providing multiple levels of priority so that network resources can be dynamically allocated by local personnel based on user and application priority level designations during times of network congestion.
- F. Roaming:** The following roaming capabilities are required: seamless roaming on the 700MHz broadband wireless network throughout the State and roaming to the NPSBN when operating outside of major metro areas or to a commercial broadband wireless network in areas where the NPSBN has not been deployed.
- G. Scalability:** The network must be designed to meet the projected needs of all of Florida's public safety agencies through 2033, at a minimum.
- H. Local Control:** Redundant Network Operations Centers (NOCs) must be established to allow public safety technical staff to control and manage certain features of the proposed network including: the provisioning of subscriber units; the prioritization of applications, subscribers and groups; and the real time management of bandwidth during emergencies.
- I. Data Encryption:** The network must provide a means to protect user data through the use of encryption methods, certificates, and keys. The network must support transport mechanisms for encryption. Currently, FIP 140-2 encryption standards are required for federal agencies and are generally accepted for sensitive data protection by state and local public safety agencies. The network must fully integrate with existing closed IT environments of state and local jurisdictions, including multi-jurisdictional access.
- J. Over The Air Programming (OTAP):** The network must be capable of programming user devices remotely, over the air, provided that the device is powered on and within the coverage area of the network. This programming includes network and roaming configurations, as well as any device-level priority settings.
- K. Next Generation 911 (NG911):** Once finalized, the network must support Next Generation 911 (NG911) features and specifications. To accomplish this, the network must interface with standards-based NG911 equipment in the PSAPs throughout the state.

- L. **Compliance:** The proposed network must comply with all applicable federal / state laws, regulations and codes.
- M. **Conformance:** The proposed network must ultimately conform to the NPSBN architecture and standards, including any standards set forth by FirstNet.
- N. **Location Information:** The network must be capable of providing the location of any user device and deliver this information to designated network administrators and wireless end users. This location must be available on the device and network, not just through an application the device.
- O. **Implementation and Transition:** The system must be implemented in such a way that causes minimal disruption for the users involved. In order to maximize the return on investment, Florida would also like the network to utilize existing public infrastructure (such as towers) as much as practical.
- P. **Business Model for Timely Deployment and Long Term Sustainment:** Florida recognizes that the funds provided by the Act will likely be insufficient to cover the costs of fully deploying the NPSBN nationally and sustaining its long term operations and maintenance (including refresh/upgrade). Therefore, Florida requires the network business model to be self-sustaining, either through user subscription fees or acceptable spectrum leasing for secondary use (consistent with guidance from FirstNet). Additionally, the system must be capable of enhancement and upgraded throughout its lifecycle (e.g. coverage enhancements, upgrade to future “5G” technology, etc.).
 - a. Florida also recognizes that network build-out and sustainment efforts benefit from a broad base of subscribers and use of the full spectrum during non-critical times. To further facilitate deployment and sustainment, Florida recognizes the benefits of public-private partnerships built on sharing of publicly and privately owned infrastructure and assets. Therefore, respondents are encouraged to submit concepts for innovative business models that take these benefits into consideration.
- Q. **Service Cost:** Florida desires a network that meets its requirements at a cost that state and local first responders can afford. Current unlimited public safety data plans are approximately \$41.00 per month, per device/user.
- R. **Convergence with Land Mobile Radio (LMR):** The network engineering and design must be mindful of the future of LMR. Florida is interested in convergence opportunities that exist between these complimentary technologies. Long-term convergence strategies, if any, should be highlighted
- S. **MyFloridaNet Re-use:** The network engineering and design must identify how Florida can leverage the network design that exists. Are there opportunities for additional partnerships of dark fiber, microwave, and state/local systems available?

- T. Tools** – The network must allow for performance assessment by local FirstNet administrators similar to what MyFloridaNet (MFN) Tools provide MFN customers.

4. Response Format

Responses to this Request for Information will be typed, formatted to follow the paragraphs in this section, and contain the information identified below. Additionally, an in-person presentation / demonstration may be requested by Florida following the response. **Responses must include four (4) total paper copies and one (1) CD or DVD with an electronic copy. The electronic copy must also include a redacted version of your response suitable for public release, if respondents deem anything within their responses to be proprietary (please see Section 8 for additional details).** Include the following in your written responses:

Based on the goals listed above, if Florida were to implement its own Radio Access Network and data network as part of the FirstNet framework, present your recommendation for a solution that Florida should consider, including an overview of the LTE technology you have selected and how it meets current and future public safety needs. Florida's intent is to identify potential products that can fulfill the functional requirements. Use the following format for your response.

1. Overview
 - a. Give a description of your understanding and approach to accomplish the goals described in the "Goals" section.
 - b. Give a description of the suggested solution; emphasizing open standards based Commercial off the Shelf (COTS) technologies, as appropriate.
 - c. Explain why the suggested solution was chosen.
 - d. Define any Hurdles/Obstacles.

2. Vendor Background
 - a. Describe your company's market presence in the United States.
 - b. List and explain your company's experience working with public safety agencies
 - c. Describe the history of your suggested solution.
 - d. How much reliance does your firm place on Commercial Off The Shelf, non-proprietary equipment?

3. Product Components – Provide a detailed list of products that will be necessary to support Florida's business needs to include system requirements for any necessary:
 - a. Software
 - b. Hardware, including Energy Star rating equipment
 - c. Third party products
 - d. Warranty
 - e. Maintenance & support
 - f. Outline scalable Mobile and Portable equipment that provides the following features:
 - a. MIL-STD Ruggedness
 - b. Immersion resistance
 - c. Intrinsic safety

4. Cost: Provide the estimated cost of the proposed solution including (but not limited to):
 - a. Overall Initial cost
 - b. Total cost over 10 years
 - c. Maintenance & support for the term of a 10-year contract
 - d. Projected recurring subscriber costs
 - e. Proposed business plan, including any applicable public-private partnership components

5. Proposed Implementation/Maintenance
 - a. Provide an overview of the implementation process and its complexity, along with a realistic estimate of the timeframe required for implementation phase.
 - b. Describe the complete level of effort to implement the system as proposed.
 - c. Describe the requirements (both financially and staffing related) to maintain the system
 - d. Method to support the products during the term of the contract.

While preparing your response, please be sure to answer the following questions in your narrative, providing a table to direct readers to the page and paragraph that contains the answers. If you are only submitting information on certain questions contained in the RFI, please mark the extraneous entries in the table as N/A.

1. Coverage
 - a. Based on your experience, how many transmitter sites do you believe would be necessary to cover the state of Florida to achieve 99% Mobile Coverage, 95% Portable Outdoor coverage and the greatest possible Portable Indoor coverage? (This can be answered in conjunction with 2a.)
 - b. Florida desires coverage out to 25 miles off-shore. Is this feasible, and how to you suggest addressing the challenge?
 - c. Florida has millions of acres of swamp and marshland. How do you suggest providing coverage to these areas with minimal impact on the environment that will pass environmental review?
 - d. Identify portable solutions that are capable of supporting the public safety mission by increasing or improving coverage in areas where broadband access/speed is limited due to geography, population, demand or other factors.

2. Capacity
 - a. Based on your experience, how many transmitter sites do you believe would be necessary to provide the desired capacity in the state of Florida? (This can be answered in conjunction with 1a.)

3. Reliability and redundancy
 - a. What methods are available to provide a 99.999% network availability?
 - b. If a site were to go down, what options are available to fill in the affected coverage?
 - c. What portable redundancy options exist (e.g. cell on wheels, cell on light truck), what are their tradeoffs, and how are they deployed?
 - d. Will your solution be designed using non-proprietary, Commercial off the Shelf technologies?

4. Survivability
 - a. How can the transmitter sites and backhaul equipment be configured withstand hurricane-strength storms, including strong winds, heavy rainfall, and flooding?
5. Priority
 - a. How methods do you recommend for providing customizable priority levels to the tens of thousands of users in Florida?
 - b. Do comprehensive authorization systems exist that allow priority to be set, per user, for both access to the network and access to applications that run on the network?
6. Roaming
 - a. How does the network handle devices roaming to and from other FirstNet-related networks, as well as commercial networks? Which commercial networks are most able to handle roaming to/from the national public safety broadband network?
7. Scalability
 - a. As Florida's coverage and capacity needs change over the next 10 to 20 years, how can the network be reconfigured or enhanced to address these changes?
8. Local control
 - a. What mechanisms are available to provide local control of network access and priority?
 - b. Explain how a hierarchy of administration can be implemented for different levels of oversight, control, and performance assessment.
9. Compliance and conformance
 - a. Explain how the network would comply with all applicable federal / state laws, regulations and codes.
 - b. Explain how the network will be adaptable to changing requirements coming from FirstNet.
10. Location
 - a. Explain how the network would determine and report location information of devices in the field.
11. Business model
 - a. Explain the costs that would be associated with the initial build-out and implementation of the network.
 - b. Explain the operational costs for the recommended model(s) of operation (e.g. state-operated network vs. out-sourced/contracted operations).
 - c. Explain the expected maintenance costs for the network, including RAN and backhaul equipment, servers and computer equipment, software licenses, and infrastructure (towers, shelters, etc.).
 - d. Explain the plan for the long-term sustainment of the infrastructure, including replacing equipment for existing technology and upgrading to new, future technologies (e.g. 5G).
 - e. Explain your thoughts on the use of spectrum leasing.
 - f. Explain any LMR convergence opportunities for Florida.
 - g. Explain how your business model adopts current and future industry standards such as OTAP, Encryption, and NG911.

- h. Explain how current and emerging mobile technologies can be incorporated by public safety into this business model. Please include applications and hardware.
12. Service costs for users
- a. Explain the expected recurring cost(s) to end-users of the system, based on priority, coverage, and throughput levels.
13. Technology evolution
- a. Describe your company's view of the future of LTE technologies over the next five (5) years.
 - b. Describe your company's view of the future of LTE technologies in the next five (5) to twenty (20) years.
14. Appliances
- a. Define available devices capable of utilizing the D-Block frequency Range.
 - b. Identify plans for public Safety grade devices (i.e. Police, Fire, Medical).
 - c. Note any accessories available/planned for add-on applications.

5. Response Date

Responses must be in accordance with the timeline below, and must address each RFI request/question(s) point by point. **Responses must be received no later than 2:30 p.m., Eastern Time on January 31, 2014.** Responses must be sent via mail to:

**Florida Department of Highway Safety and Motor Vehicles
c/o Ms. Jenny Marshall
Bureau of Purchasing & Contracts
2900 Apalachee Parkway, MS-31
Tallahassee, FL 32399
Phone: (850) 617-3203**

Timeline:

December 26, 2013	RFI posted on the Vendor Bid System (VBS)
January 10, 2014	Vendor Questions Due, no later than 3:00 PM Eastern Time
January 17, 2014	Anticipated Posting of Responses to Questions on the VBS
January 31, 2014	Vendor Responses Due, no later than 2:30 PM Eastern Time
February 24 2014	Anticipated Date to Schedule Vendor Demonstrations (if applicable)
March 3, 2014	Anticipated Date to Begin Vendor Demonstrations (if applicable)

6. Questions

Please feel free to contact the Department of Highway Safety and Motor Vehicles with any questions regarding this Request for Information. Questions to this RFI are encouraged to ensure that each response provides the desired information. All answers to all questions will be posted on the VBS and will be available for anyone to view. Questions must be directed to Jenny Marshall via e-mail at: JennyMarshall@flhsmv.gov.

7. Demonstrations

If after receiving vendor responses, it is determined a vendor demonstration is necessary, the State of Florida will work with the vendor to establish a date and time for presentations. The purpose of this presentation will be for the vendor to provide a demonstration of the product, and any information that they believe will be of value to Florida.

8. Proprietary Information

Any portion of the submitted response which is asserted to be exempt from disclosure under Chapter 119, Florida Statutes, shall be clearly marked “exempt”, “confidential”, or “trade secret” (as applicable) and shall also contain the statutory basis for such claim on every page. Pages containing trade secrets shall be marked “trade secret as defined in Section 812.081, Florida Statutes.” Failure to segregate and identify such portions shall constitute a waiver of any claimed exemption and the Department will provide such records in response to public records requests without notifying the respondent. Designating material simply as “proprietary” will not necessarily protect it from disclosure under Chapter 119, Florida Statutes.

9. Vendor Costs

Vendors are responsible for all costs associated with the preparation, submission, and any potential demonstration or meeting to discuss this Request for Information. The State of Florida, Department of Highway Safety and Motor Vehicles will not be responsible for any vendor related costs associated with responding to this request.