



June 2017

# PUBLIC-SAFETY BROADBAND NETWORK

FirstNet Has Made  
Progress Establishing  
the Network, but Should  
Address Stakeholder  
Concerns and  
Workforce Planning

Accessible Version

# GAO Highlights

Highlights of [GAO-17-569](#), a report to the Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate

## Why GAO Did This Study

FirstNet is charged with establishing a nationwide public-safety broadband network that is reliable, secure, and interoperable. To inform this work, FirstNet is consulting with a variety of stakeholders. In March 2017, FirstNet awarded a 25-year contract to AT&T to build, operate, and maintain the network. FirstNet's oversight of AT&T's performance is important given the scope of the network and the duration of the contract.

GAO was asked to review FirstNet's progress and efforts to ensure the network is reliable, secure, and interoperable. GAO (1) examined FirstNet's efforts to establish the network; (2) obtained stakeholder views on network reliability, security, and interoperability challenges FirstNet faces and its efforts to address them; and (3) assessed FirstNet's plans to oversee its network contractor. GAO reviewed FirstNet documentation, key contract oversight practices identified in federal regulations and other sources, tribal communication practices identified by federal agencies, and assessed FirstNet's efforts and plans against these practices. GAO also interviewed FirstNet officials and a nongeneralizable selection of public-safety, tribal, and other stakeholders selected to obtain a variety of viewpoints.

## What GAO Recommends

GAO recommends that FirstNet fully explore tribal stakeholders' concerns and assess its long-term staffing needs. FirstNet agreed with GAO's recommendations.

View [GAO-17-569](#). For more information, contact Mark L. Goldstein at (202) 512-2834 or [goldsteim@gao.gov](mailto:goldsteim@gao.gov).

June 2017

## PUBLIC-SAFETY BROADBAND NETWORK

### FirstNet Has Made Progress Establishing the Network, but Should Address Stakeholder Concerns and Workforce Planning

## What GAO Found

The First Responder Network Authority (FirstNet) has conducted key efforts to establish the network, namely releasing the request for proposal (RFP) for the network and awarding the network contract to AT&T. As the contractor, AT&T will be responsible for the overall design, development, production, operation, and evolution of the network. Additionally, FirstNet consulted with state and local, federal, and tribal stakeholders. State officials GAO contacted were generally satisfied with FirstNet's efforts to engage them. However, tribal stakeholders GAO contacted expressed concern that FirstNet has not fully engaged in effective communication with tribes. FirstNet engaged tribes through a variety of mechanisms, such as through state points of contact and a working group, but tribes noted that individuals with first-hand knowledge of tribes' experiences are unable to represent tribal views directly among FirstNet's key decision makers. Although FirstNet is required to consult with tribes through state points of contact, a key principle of effective tribal communication is to seek full understanding of tribal concerns and reach consensus where possible. By fully exploring and proposing actions to address tribal stakeholders' concerns, FirstNet could help improve its relations with tribes and better meet stakeholders' needs.

According to stakeholders GAO contacted, FirstNet faces various challenges to ensure the network's reliability, security, and interoperability. For example, stakeholders raised concerns related to:

- providing coverage to rural areas, in buildings, or underground;
- ensuring the network's overall resiliency and cybersecurity; and
- managing frameworks for user identity, credentialing of users, access management, and prioritization of users on the network.

FirstNet has taken action to address these challenges, such as by opening a test lab to test public safety devices and applications before deploying them on the network. The majority of stakeholders GAO contacted were satisfied with FirstNet's efforts, but many noted that much uncertainty remains about how the network will be implemented.

FirstNet established offices to oversee its network contractor, developed policies and procedures to guide contract administration—including management and oversight—and is receiving assistance from another federal agency with contract administration experience, although FirstNet plans to assume full responsibility in the future. For example, FirstNet established the Network Program Office to oversee the contractor's performance and facilitate quality assurance of contract deliverables, among other things. Although this office will perform essential contract-administration functions, FirstNet had not conducted long-term projections of staffing needs for the office as of April 2017. As a result, FirstNet lacks reasonable assurance that it will have sufficient resources to handle increases in its responsibilities over time. Planning for and assigning adequate resources, including people, and assessing resource needs is a key practice for planning and executing effective contract oversight. By performing a long-term staffing assessment for the Network Program Office, FirstNet would be in a better position to fully understand its staffing needs and respond to staffing changes and risks as it assumes full responsibility of contract administration in the future.

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**Abbreviations**

2012 Act	Middle Class Tax Relief and Job Creation Act of 2012
Commerce	Department of Commerce
DHS	Department of Homeland Security
FCC	Federal Communications Commission
FirstNet	First Responder Network Authority
Interior	Department of the Interior
LMR	land mobile radio
LTE	Long Term Evolution
MHz	megahertz
NASA	National Aeronautics and Space Administration
NIST	National Institute of Standards and Technology
NTIA	National Telecommunications and Information Administration
PSAC	Public Safety Advisory Committee
PSCR	Public Safety Communications Research
QASP	Quality Assurance Surveillance Plan
RAN	radio access network
RFI	request for information
RFP	request for proposal
SPOC	Single Point of Contact

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June 20, 2017

The Honorable John Thune  
Chairman  
Committee on Commerce, Science, and Transportation  
United States Senate

Dear Mr. Chairman:

Communications systems are essential for public safety officials, especially first responders such as police officers, firefighters, and emergency medical-services personnel. Whether conducting daily operations, overseeing planned events, or responding to emergencies, public safety officials rely on these systems to gather and share information and coordinate their efforts. However, we have previously reported that first responders often have difficulty communicating among agencies because existing systems lack interoperability—that is, first responders may lack the capabilities that allow them to communicate with their counterparts in other agencies and jurisdictions with differing systems.<sup>1</sup>

The Middle Class Tax Relief and Job Creation Act of 2012 (the 2012 Act) created the First Responder Network Authority (FirstNet) within the Department of Commerce’s (Commerce) National Telecommunications and Information Administration (NTIA), and required it to establish a nationwide, interoperable public-safety broadband network (hereafter, the network). The 2012 Act provided FirstNet with \$7 billion to fund the network’s initial build-out and set aside spectrum for the network to operate on.<sup>2</sup> Key to the network’s success, given its purpose, is its reliability, security, and interoperability. To inform its work, FirstNet must consult with state and local, federal, and tribal stakeholders.<sup>3</sup> Since 2012,

<sup>1</sup>GAO, *Emergency Communications: Various Challenges Likely to Slow Implementation of a Public Safety Broadband Network*, [GAO-12-343](#) (Washington, D.C.: Feb. 22, 2012).

<sup>2</sup>Middle Class Tax Relief and Job Creation Act of 2012. Pub. L. No. 112-96, 126 Stat. 156 (2012) (codified at 47 U.S.C. §§ 1401-1457). The radio frequency spectrum is the part of the natural spectrum of electromagnetic radiation lying between the frequency limits of 3 kilohertz and 300 gigahertz. Radio signals travel through space in the form of waves. These waves vary in length, and each wavelength is associated with a particular radio frequency. These frequencies are grouped into bands, allocated for specific purposes, and assigned to specific users through licenses.

<sup>3</sup>Pub. L. No. 112-96, § 6206(c)(2)(A), 126 Stat. at 215.

FirstNet has completed a number of tasks to plan for the build-out of the network, the most significant of which was the issuance of a request for proposal (RFP) to solicit proposals from private companies to build, operate, and maintain the network. From these proposals, FirstNet selected AT&T as its network contractor and awarded it a multi-billion dollar, 25-year contract in March 2017. Due to the size of the project and duration of the contract, the oversight mechanisms that FirstNet plans to employ to monitor AT&T's progress and performance building, operating, and maintaining the network are important.

You asked us to review FirstNet's progress and efforts to ensure the network is reliable, secure, and interoperable. This report (1) examines FirstNet's efforts to establish and finance the network; (2) describes stakeholder views on network reliability, security, and interoperability challenges FirstNet faces and its research and other efforts to address them; and (3) assesses FirstNet's plans to oversee the deployment of the network by its network contractor.

To address these objectives, we reviewed the 2012 Act and FirstNet documentation, such as board-meeting materials, financial and technical reports, and the network RFP. We did not review the full network contract because FirstNet awarded the contract in March 2017, and as of April 2017, FirstNet was still finalizing and engaging in post-award discussions with AT&T. We also reviewed documentation from other federal entities involved in FirstNet's efforts, such as FirstNet's key research partner, the Public Safety Communications Research (PSCR) program (which is a joint program between Commerce's National Institute of Standards and Technology [NIST] and NTIA). Further, we compared FirstNet's efforts to respond to tribal stakeholders' concerns with the applicable key principle of effective tribal communication on federal infrastructure decisions developed by several federal agencies.<sup>4</sup> We assessed the PSCR's and FirstNet's research activities against our previously identified criteria on

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<sup>4</sup>U.S. Departments of the Interior, the Army, and Justice, *Improving Tribal Consultation and Tribal Involvement in Federal Infrastructure Decisions* (January 2017). In this report, the Departments of Interior, the Army, and Justice note that the principles they identified should serve as a guide for federal agencies when their federal infrastructure projects may impact tribes, and that their recommendations do not impose legally binding obligations on any federal agency.

key phases of sound research programs.<sup>5</sup> We assessed FirstNet's contract oversight plans against key acquisition and contract oversight practices established in federal acquisition regulations, Commerce's acquisition manual, prior GAO reports, and other academic and industry sources.<sup>6</sup> We selected the key practices (and the key actions that contribute to the successful implementation of the practices) based on FirstNet's acquisition approach and the stage of the acquisition process FirstNet was in during the course of our review. We also interviewed FirstNet and Commerce officials. To obtain stakeholder views on all our objectives—particularly the challenges FirstNet faces—we contacted a variety of stakeholders, such as public safety, state and local government, and tribal associations and organizations; the Department of Homeland Security, the Federal Communications Commission (FCC), and NIST and NTIA; and state government and public safety officials. In total, we selected 33 stakeholders, including 5 tribal organizations, to obtain a variety of viewpoints from a cross section of stakeholder interests and geographic locations. These stakeholders' views are not generalizable to those of all FirstNet stakeholders. In reviewing FirstNet's efforts to establish the network, we focused on activities since April 2015, when we last reported on FirstNet.<sup>7</sup> Appendix I describes our scope and methodology in greater detail.

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<sup>5</sup>GAO, *Employment and Training Administration: More Actions Needed to Improve Transparency and Accountability of Its Research Programs*, [GAO-11-285](#) (Washington, D.C.: Mar. 15, 2011). In this report, we identified the key elements and phases of sound research programs based on guidelines developed by leading national organizations, including the American Evaluation Association and the National Academy of Sciences.

<sup>6</sup>Commerce, *Selecting Contract Types*, *Commerce Acquisition Manual*, 1316.1, 6.3 (March 2016); GAO, *Joint Information Environment: DOD Needs to Strengthen Governance and Management*, [GAO-16-593](#) (Washington, D.C.: July 14, 2016); GAO, *National Science Foundation: Steps Taken to Improve Contracting Practices, but Opportunities Exist to Do More*, [GAO-13-292](#) (Washington, D.C.: Mar. 28, 2013); GAO, *Information Technology Investment Management, A Framework for Assessing and Improving Process Maturity*, [GAO-04-394G](#) (Washington, D.C.: Mar. 1, 2004); Software Engineering Institute/Carnegie Mellon, *Capability Maturity Model<sup>®</sup> Integration (CMMI<sup>®</sup>) for Acquisition*, Version 1.3, CMU/SEI-2010-TR-032 (Pittsburgh, PA.: November 2010); Project Management Institute, Inc., *The Standard for Program Management—Third Edition* (Newtown Square, PA: 2013); Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge (PMBOK<sup>®</sup> Guide)—Fifth Edition* (Newtown Square, PA: 2013). PMBOK is a trademark of Project Management Institute, Inc.

<sup>7</sup>GAO, *Public-Safety Broadband Network: FirstNet Should Strengthen Internal Controls and Evaluate Lessons Learned*, [GAO-15-407](#) (Washington, D.C.: Apr. 28, 2015).

We conducted this performance audit from May 2016 to June 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

Public safety officials across the nation rely on thousands of separate land mobile radio (LMR) systems to conduct their daily operations and communicate with each other during emergencies or planned events. These systems support “mission critical” voice capabilities—that is, voice capabilities that meet a high standard for reliability, redundancy, capacity, and flexibility—but are often incompatible with systems used by public safety officials in different jurisdictions. For data transmissions (such as location information, images, and video) public safety entities often pay for commercial wireless services. However, we have previously reported that commercial networks do not always support the reliability and other requirements that public safety officials need.<sup>8</sup> By establishing a single, dedicated network for public safety use, FirstNet’s network is expected to foster greater interoperability and meet public safety officials’ reliability and other needs.

The 2012 Act established numerous responsibilities for FirstNet to ensure the building, operation, and maintenance of the network. The network is intended to be a high-speed, wireless data and voice telecommunications network based on Long Term Evolution (LTE) service standards, which are commercial standards for wireless technologies.<sup>9</sup> The actual use (or “adoption”) of the network by public safety users will be voluntary. In establishing this network, FirstNet must develop a nationwide core network<sup>10</sup> that connects to 56 radio access networks (RAN) in each state,

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<sup>8</sup>[GAO-15-407](#); [GAO-12-343](#).

<sup>9</sup>While it is expected that the network will support voice communications, initially it will not have mission critical voice capabilities until LTE standards for those capabilities are developed, which FirstNet officials told us they expect may occur within the next 4 years.

<sup>10</sup>The core network can consist of national and regional data centers and other elements that store, process, and secure network user traffic (activity), and interface with state, local, and federal networks.

territory, and the District of Columbia (hereafter, states);<sup>11</sup> develop the technical and operational requirements of the network; ensure the network's safety, security, and resiliency; issue RFPs to private sector entities for the purpose of building, operating, and maintaining the network;<sup>12</sup> and manage and oversee the implementation of contracts with these private sector entities, among other things.<sup>13</sup> Further, the 2012 Act requires that FirstNet operate as a self-funding entity beyond the initial \$7 billion provided.<sup>14</sup>

The 2012 Act required FirstNet to be headed by a 15-member board with 3 permanent members (the Secretary of Homeland Security, the Attorney General, and the Director of the Office of Management and Budget) and 12 individuals appointed by the Secretary of Commerce. The appointed members are required to have public safety experience or technical, network, or financial expertise and at least 3 of these appointed individuals must represent the collective interests of the states, localities, tribes, and territories.<sup>15</sup> Commerce officials told us that when appointing individuals to boards or advisory committees, Commerce follows a specified recruitment process, part of which includes publishing a notice in the Federal Register announcing the recruitment and soliciting nominations. As of April 2017, 11 appointed individuals held a position on the FirstNet Board.<sup>16</sup> In addition to the Board, as of February 2017, FirstNet's staff consisted of about 200 employees.

The 2012 Act also required FirstNet to establish a standing Public Safety Advisory Committee (PSAC) to offer FirstNet guidance and subject matter expertise and conduct outreach to the PSAC's membership—primarily comprising associations that represent different levels of government and

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<sup>11</sup>RANs can consist of cell towers and other elements that connect to network user devices.

<sup>12</sup>Although the 2012 Act does not require FirstNet to follow the Federal Acquisition Regulation's process, FirstNet chose to comply with these regulations. These regulations are the comprehensive set of rules governing the process by which executive branch agencies procure goods and services.

<sup>13</sup>Additional information on FirstNet's responsibilities can be found in [GAO-15-407](#).

<sup>14</sup>Pub. L. No. 112-96, § 6208, 126 Stat. 156, 215.

<sup>15</sup>Pub. L. No. 112-96, § 6206(c)(2)(A), 126 Stat. at 213.

<sup>16</sup>Board members' terms are staggered. One member's term expired on August 20, 2016, and as of April 2017, the vacancy had not been filled.

public safety disciplines—on FirstNet’s network development.<sup>17</sup> The PSAC conducts the majority of its work in response to requests from FirstNet. The 2012 Act also established that FirstNet must consult with state and local, federal, and tribal jurisdictions on developing the network.<sup>18</sup> For state, local, and tribal consultation, state Single Points of Contact (SPOCs) chosen by the governor of each state are the designated entities with whom FirstNet must consult regarding its responsibilities under the 2012 Act.<sup>19</sup>

In addition to these key stakeholders, the 2012 Act established roles for other federal agencies, as follows:

- As the entity responsible for managing and licensing commercial and non-federal spectrum use, the 2012 Act required FCC to (1) conduct spectrum auctions so that the expected proceeds could be used to fund the initial build-out of the network,<sup>20</sup> and (2) grant FirstNet a license to operate the network on 20 megahertz (MHz) of spectrum in the upper 700 MHz band.<sup>21</sup> FirstNet’s license expires in 2022, and prior to this expiration, FirstNet must submit an application to FCC for renewal demonstrating that it has met the responsibilities set forth in the 2012 Act.
- The 2012 Act provided \$300 million to NIST from the expected spectrum auction proceeds to direct and conduct research; assist with

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<sup>17</sup>Pub. L. No. 112-96, § 6205(a)(1), 126 Stat. at 211.

<sup>18</sup>Pub. L. No. 112-96, § 6206(c)(2)(A), 126 Stat. at 213.

<sup>19</sup>Pub. L. No. 112-96, §§ 6302(d), 126 Stat. at 219, 6206(c)(2)(B), 126 Stat. at 214. Under the 2012 Act, these responsibilities include: construction of a core network and RAN build-out; placement of towers; network coverage areas; adequacy of reliability, security, and other requirements; assignment of priority to local users; assignment of priority and selection of entities seeking access to or use of the network; and training needs of local users.

<sup>20</sup>Pub. L. No. 112-96, § 6413(b)(3), 126 Stat. at 236. FCC held the specified spectrum auctions in 2014 and 2015. Prior to receiving the auction proceeds, NTIA borrowed \$2 billion from the U.S. Treasury, as authorized by the 2012 Act, to support FirstNet’s initial work.

<sup>21</sup>Pub. L. No. 112-96, § 6201, 126 Stat. at 206. Universal Licensing System, License Call Sign WQQE234 (Nov. 15, 2012). A number of public safety entities around the country are still operating on FirstNet’s licensed spectrum under previously issued FCC authorizations. These entities will be required to relocate their communications operations to other frequencies allocated by FCC. FirstNet established a grant program to facilitate this relocation; in August 2016, FirstNet awarded about \$27 million in grants, and FirstNet expects relocations to be complete by the end of 2017.

the development of standards, technologies, and applications to advance wireless public-safety communications (and, in so doing, conduct certain activities in support of FirstNet’s network); and collaborate with government and industry, among other things.<sup>22</sup> The \$300 million is available through fiscal year 2022. According to NIST officials, because NIST had to wait for the spectrum auction to generate these funds, it received its first allotment of almost \$100 million in October 2015 and the remaining almost \$200 million in September 2016. Of these funds, as of January 2017, NIST officials told us approximately \$15 million was obligated toward activities identified in the 2012 Act, and officials said the program planned additional obligations in fiscal year 2017 to begin fulfilling requirements.

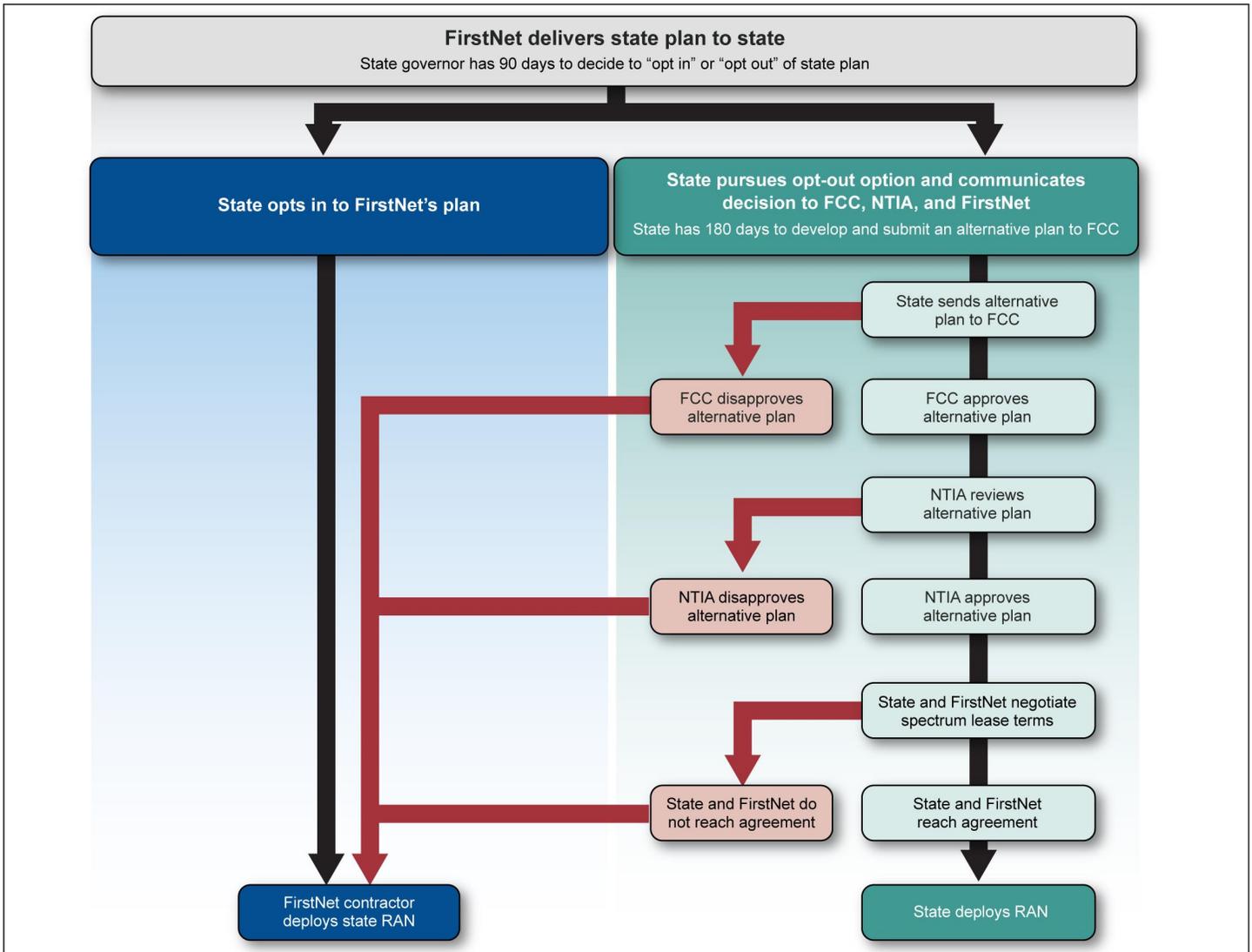
Finally, after completing the RFP process, to deploy the network the 2012 Act requires FirstNet to provide the governor of each state with a plan that details FirstNet’s strategy for the build-out of the network in that state; FirstNet refers to these as the “state plans.”<sup>23</sup> FirstNet plans to use a web-based portal to deliver these plans to each state. States must either “opt in” to FirstNet’s plan and allow FirstNet’s contractor to assume responsibility for building, operating, and maintaining the RAN in that state, or “opt out” and assume those responsibilities themselves, after obtaining necessary approvals from FCC and NTIA and negotiating a spectrum lease with FirstNet (see fig. 1). For any states that do not explicitly choose whether to opt in or out of the network, FirstNet has determined that it will interpret that as a decision to opt in and will proceed with its plan for that state. While a RAN is expected to be built in each state, network use is voluntary and thus public safety officials are not required to use FirstNet’s network.

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<sup>22</sup>Pub. L. No. 112-96 §§ 6413(b)(4), (7), 126 Stat. at 236.

<sup>23</sup>Pub. L. No. 112-96, § 6302(e)(1), 126 Stat. at 219.

**Figure 1: Process for Deploying Radio Access Networks (RAN) for the Public-Safety Broadband Network**



Source: GAO analysis of the 2012 Middle Class Tax Relief and Job Creation Act and documentation from the Federal Communications Commission (FCC), National Telecommunications and Information Administration (NTIA), and First Responder Network Authority (FirstNet). | GAO-17-569

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## FirstNet Has Made Progress Establishing the Network and Its Financing, but Some Stakeholders Have Expressed Concern about Consultation Activities

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### FirstNet Has Conducted Key Efforts to Plan for the Network, but Some Tribal Stakeholders Believe FirstNet Has Not Effectively Communicated with Tribes

To establish the network, FirstNet's primary activities since April 2015 have been to (1) release the RFP for the network and award the network contract and (2) conduct outreach and consult with stakeholders, including tribal entities. Regarding tribal entities in particular, although FirstNet is required to consult with tribes through the SPOCs, some tribal stakeholders have expressed concern about FirstNet's efforts to communicate with tribes.

#### RFP Release and Contract Award

FirstNet released the final RFP for the network in January 2016 with support from its acquisition service provider, the Department of the Interior (Interior).<sup>24</sup> On March 30, 2017, FirstNet awarded the contract to AT&T.<sup>25</sup> FirstNet's RFP described two overall areas that FirstNet expects AT&T to provide and manage: the network's technical solution and business functions. Regarding the network's technical solution, AT&T will be responsible for the overall design, development, production, operation, and evolution of the network. Specifically, the RFP identified overall performance objectives for the network and the requested services from the contractor. FirstNet used an objectives-based RFP approach, whereby FirstNet outlined the objectives and requested services it expected potential contractors to fulfill, which it believes provided flexibility to interested offerors to propose and define their approach to

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<sup>24</sup>The Department of Interior's Interior Business Center, Acquisition Services Directorate issued the RFP on behalf of FirstNet. This center provides comprehensive acquisition services to federal agencies, including managing the process of soliciting, awarding, and administering contracts.

<sup>25</sup>The team led by AT&T also includes Motorola Solutions, General Dynamics, Sapient Consulting, and Inmarsat Government.

meeting these objectives and providing these services. According to FirstNet officials, AT&T's approach met all of the objectives identified in the RFP. As such, AT&T will be expected to:

- Design, build, operate, and maintain a core network and establish various network services including data, voice, messaging, video, and location services.
- Assist FirstNet in developing and delivering the state plans. For states that opt in to FirstNet's plan to build a RAN in that state, AT&T will be responsible for deploying those state RANs. For states that opt out of FirstNet's plan and assume RAN responsibilities, AT&T will be responsible for integrating the core network across all state RANs to ensure network users experience no service disruptions crossing RAN service boundaries.
- Deploy the network in phases to achieve coverage goals as defined by FirstNet, including milestones for substantial rural coverage<sup>26</sup> and an ability for users to roam outside their coverage area.<sup>27</sup>
- Ensure the network's cybersecurity while taking into account the diverse needs of users across different public-safety disciplines.
- Provide a network designed to operate during natural and manmade disasters as necessary to meet service availability objectives.
- Provide network service that is capable of prioritizing public safety use and access over other users and preempting other users,<sup>28</sup> and that

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<sup>26</sup>FirstNet has chosen to define "rural" as per the Rural Electrification Act of 1936 as any area that is not a city, town, or incorporated area and that has a population of greater than 20,000 inhabitants; or any urbanized area contiguous and adjacent to a city or town and that has a population of greater than 50,000 inhabitants.

<sup>27</sup>Roaming is a technology to ensure a traveling wireless device is kept connected to a network without breaking the connection when traveling outside the geographical coverage area of its home network.

<sup>28</sup>Generally, priority transmission of calls and data is provided through special enhancements embedded in telecommunications networks to identify transmissions made by authorized users as higher priority than those made by other users. These enhancements automatically place the transmission higher in the queue over those made by other users. Preemption is used together with priority to control use of network resources by removing lower priority users and allowing allocation of resources to higher priority users, when network resources are scarce or fully occupied.

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supports the management of users' identities, credentialing, and access to the network.<sup>29</sup>

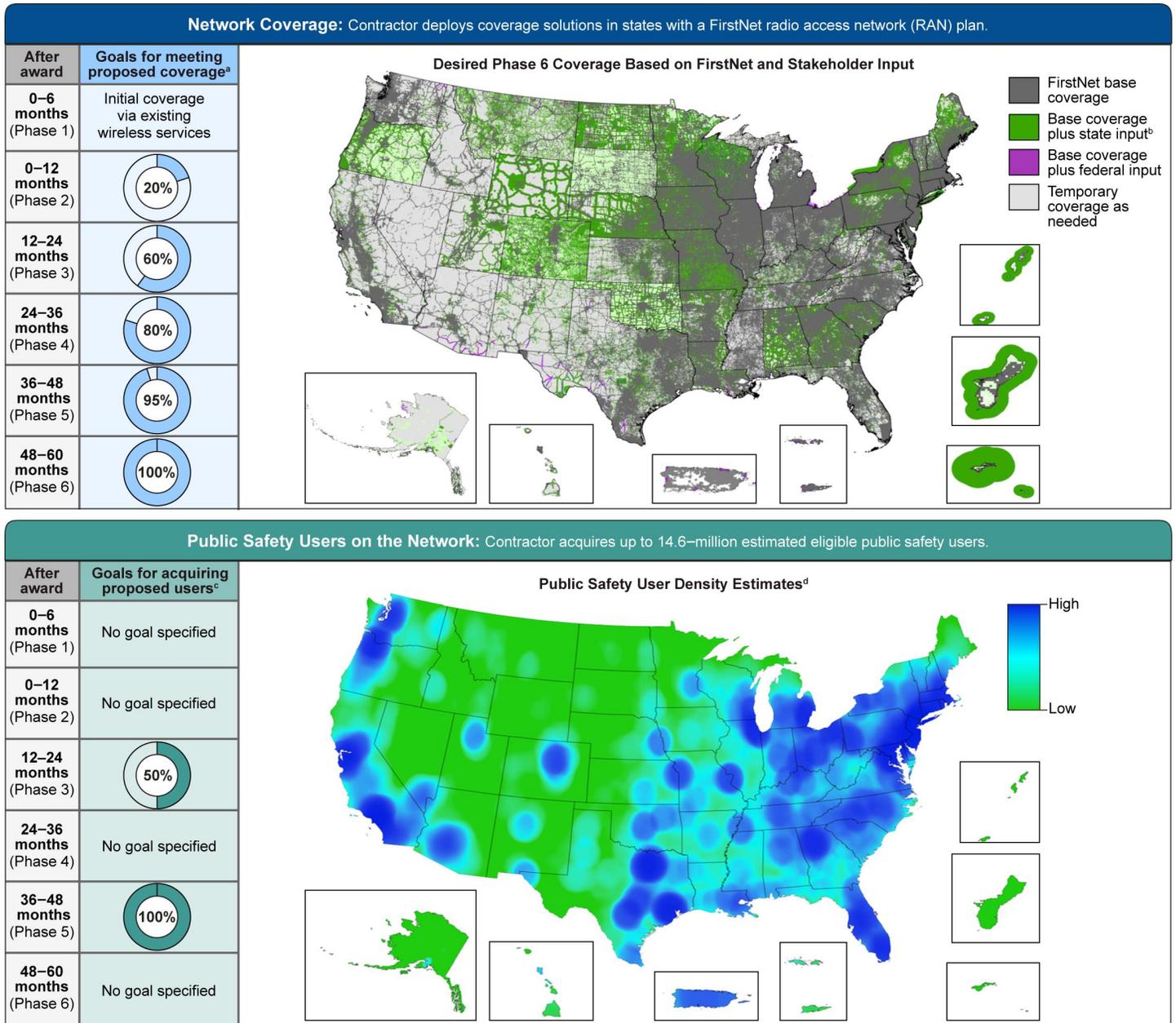
- Provide devices (such as smartphones), an applications ("apps") store, and an evolving portfolio of applications relevant to public safety users.

The RFP identified a schedule with milestone targets. The schedule detailed FirstNet's goals for deploying these various features and achieving phased coverage and milestones for adoption by public safety users. For example, AT&T will be required to provide network service-coverage solutions to meet goals identified by FirstNet in both non-rural and rural areas, and will be evaluated by how well it is acquiring and retaining public safety users in each state (see fig. 2). In particular, the RFP outlines six phases spanning 5 years, during which network coverage will incrementally expand and the number of users and devices on the network is expected to increase.

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<sup>29</sup>Identity, credential, and access management refers to the technology framework for authenticating user identities to authorize services and applications for use, and providing access to buildings, networks, and information technology systems.

**Figure 2: Selected Milestones for Deploying the Public-Safety Broadband Network Post Contract Award, per the January 2016 RFP**



Source: GAO analysis of the First Responder Network Authority (FirstNet) request for proposal (RFP) and FirstNet information. | GAO-17-569

<sup>a</sup>Phase 1 goal begins with the award of the network contract and the initial task orders resulting from the contract. Goals for phases 2–6 begin with the award of each subsequent task order for the deployment of the state RANs.

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<sup>b</sup>Includes state data collected through September 2016.

<sup>c</sup>Goals begin with the award of each task order for the deployment of the state RANs. Target goals are based on the total number of user devices on a network user contract proposed for Phase 5.

<sup>d</sup>In this user density map, FirstNet aggregated stakeholder data (from states, territories, tribes, and federal agencies) with its own internal data to produce nationwide estimates of the demand for coverage by public safety users at the county level.

In March 2017, AT&T stated that it expects network build-out to begin later in 2017. FirstNet has stated it is prioritizing the development of state plans for release to all states by the end of June 2017 for states' initial review and comment prior to FirstNet's providing official notice to the state governors. According to FirstNet documentation as of May 2017, FirstNet expects this official notice to occur no later than late September 2017.<sup>30</sup>

In addition to the network's technical solution, the RFP specified various business management functions that the contractor is required to provide for the network. In particular, per the RFP AT&T will provide marketing, product management, sales, distribution, customer care, and communications. For example, AT&T will be responsible for marketing and selling the network services to public safety users by establishing competitive service packages, managing sales and distribution of the services and products, providing customer service, and retaining public safety customers. The RFP identified several areas that AT&T will be required to address in its customer service approach including measuring customer satisfaction, resolving customer requests or issues with service delivery or products, providing corrective action for service impairments and service restoration, and providing training to customers on device and service usage.

### Stakeholder Outreach and Consultation

Since we last reported on FirstNet in 2015, to inform its efforts to plan and establish the network—including the development of the RFP and state plans—FirstNet has continued to conduct general outreach and to consult specifically with state and local, federal, and tribal stakeholders as described in the 2012 Act.<sup>31</sup> With regard to general outreach, FirstNet has attended or hosted hundreds of conferences and meetings, participated in

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<sup>30</sup>The RFP required AT&T to provide a more detailed integrated master schedule and work breakdown structure detailing the tasks required for the deployment and operation of the network, and a milestone timeline detailing its solution in accordance with FirstNet's overall schedule, among other things.

<sup>31</sup>[GAO-15-407](#).

conference calls and webinars, and regularly corresponded via emails and newsletters. FirstNet has also continued to obtain and evaluate lessons learned from the five “early builder projects” that are deploying local and regional public-safety broadband networks similar to what FirstNet must do on a national scale.<sup>32</sup> According to FirstNet officials, it has incorporated these lessons into its network planning. For example, according to FirstNet documentation, FirstNet has identified reliance on public assets as a risk to deployment timelines after recognizing that the early builder projects had mixed success using public infrastructure assets.

In addition to this general outreach, FirstNet has continued to consult with states and localities through the SPOCs as required by the 2012 Act. With the SPOCs’ assistance, FirstNet conducted an initial consultation meeting in all but one state to begin its formal consultation efforts.<sup>33</sup> FirstNet completed these initial consultation visits in October 2015. Since completing these meetings, FirstNet has continued additional efforts to consult with the states through the SPOCs and plans to hold a consultation meeting in each state with the key executives, public safety officials, and tribal leaders who will be involved in deciding whether the state chooses to opt in to the FirstNet state plan. As of March 2017, FirstNet had participated in 49 of these meetings. Through a request to the SPOCs, from March through September 2015, FirstNet collected data from the public safety community within the states to inform the RFP and future state plans. Specifically, states provided data on their desired network coverage, the potential network-user base in their state, their use of broadband data, and existing broadband service providers and plans.<sup>34</sup> To support states’ efforts to collect, analyze, and submit these data, NTIA awarded \$116 million in grants through its State and Local Implementation Grant Program.<sup>35</sup> Most state officials we contacted were generally satisfied with FirstNet’s efforts to engage states, but some said

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<sup>32</sup>These projects, which operate on FirstNet’s spectrum, are located in California, Colorado, New Jersey, New Mexico, and Texas. See [GAO-15-407](#) for additional information on them.

<sup>33</sup>Mississippi had not scheduled a formal initial consultation meeting with FirstNet.

<sup>34</sup>Fifty-four states and territories submitted data to FirstNet.

<sup>35</sup>NTIA awarded these funds in two phases. During phase one, which began in 2013, states used their funds to consult with FirstNet and engage relevant stakeholders, among other things. During phase two, which began in 2015, states used their funds to respond to FirstNet’s data request and continue phase one activities.

that the timelines for states to review state plans will be challenging and, relatedly, two organizations representing local governments said that local entities would like further engagement as states make opt-in or opt-out decisions. FirstNet plans to release draft state plans, as described above, to allow for additional engagement on these plans prior to releasing the final versions.

Further, FirstNet has expanded its efforts to consult with federal departments and agencies as required by the 2012 Act. Federal public safety officials (such as law enforcement officers in the Department of Homeland Security) are eligible, but not required, to use the network. In January 2015, FirstNet held a summit to formally begin its federal consultation program. Following this kickoff meeting, FirstNet chose to adopt the state “SPOC” model for its federal consultation efforts by requesting that relevant federal agencies designate an agency point of contact to consult with FirstNet.<sup>36</sup> FirstNet has since engaged these agency contacts in a variety of ways, such as by holding monthly conference calls with these officials and inviting them to respond to the data request that it submitted to the states.<sup>37</sup> FirstNet also requested that the PSAC create a Federal Working Group. The goal of this working group—which launched activities in September 2016—is to integrate FirstNet’s federal consultation activities with those of the PSAC.

FirstNet has also consulted with tribes through the SPOCs as required by the 2012 Act, and engaged in other consultation and outreach efforts with tribes. In October 2015, FirstNet hired two tribal outreach liaisons to complete its three-person tribal outreach team. This team facilitates consultation activities between the SPOCs and tribes in their states. This team also works with the PSAC’s Tribal Working Group, which the PSAC established to advise FirstNet on inclusive consultation strategies and tribal outreach and education, and to participate in SPOC activities with tribes to the fullest extent possible. This group—which convened its first meeting in February 2015—includes representatives from national, regional, and individual tribal entities.

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<sup>36</sup>FirstNet requested that the 14 member agencies of the Department of Homeland Security’s Emergency Communications Preparedness Center designate an agency contact. This center is the federal interagency focal point for interoperable communications coordination.

<sup>37</sup>Seven federal agencies responded to the request.

Additionally, as a federal agency, FirstNet must comply with the National Environmental Policy Act, which requires it to evaluate the likely environmental effects of projects it proposes using an environmental assessment or, if the projects likely would significantly affect the environment, a more detailed environmental impact statement.<sup>38</sup> FirstNet must also comply with the National Historic Preservation Act, and FirstNet has a dedicated Federal Preservation Officer who is responsible for tribal consultation under those requirements.<sup>39</sup> As part of efforts to comply with these laws, in January 2015 FirstNet sent letters to all 567 federally recognized tribes informing them about FirstNet and its mission (among other things) and, later, as part of its efforts to prepare regional programmatic environmental impact statements for the network, sent additional letters informing tribes of the statements and inviting them to comment and participate in public meetings.<sup>40</sup>

To supplement FirstNet's consultation under the 2012 Act through the SPOCs and these other efforts, FirstNet's tribal outreach team and the PSAC's Tribal Working Group also conduct outreach to the tribes. For example, according to FirstNet officials, the tribal outreach team engages and meets directly with tribes and tribal associations, and the Tribal Working Group's members advise FirstNet on tribal outreach and education and share information about FirstNet with their communities. FirstNet further noted that in August 2013, its Board identified a tribal liaison among the current membership to represent the collective interests of tribes.

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<sup>38</sup>National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852 (1969). Under regulations that implement these requirements, federal agencies are required to consult early with Indian tribes, among other parties, when tribal involvement is reasonably foreseeable. 40 C.F.R. § 1501.2(d)(2).

<sup>39</sup>National Historic Preservation Act of 1966, Pub. L. No. 89-665, 80 Stat. 915 (1966). Under the regulations implementing section 106 of this Act, federal agencies must consult with Indian tribes to identify historic properties potentially affected by any activity they fund, license or undertake; assess the activity's effects; and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. 36 C.F.R. §§ 800.1(a), 800.2(c)(2). Our discussions with tribal stakeholders regarding FirstNet consultation focused on FirstNet's responsibilities per the 2012 Act, and not on consultation as described under the National Environmental Policy or Historic Preservation Acts.

<sup>40</sup>Between March and October 2016, FirstNet released five draft statements covering the non-contiguous, east, central, west, and south regions of the U.S. According to FirstNet officials, FirstNet also sent letters to 17 native Hawaiian organizations.

However, tribal stakeholders we contacted expressed concern with FirstNet's efforts to consult with tribes per the 2012 Act's requirements. In particular, four of the five tribal organizations we contacted said that FirstNet has not fully engaged in effective communication or has relied on the SPOCs too much as opposed to engaging directly with tribes; the other tribal organization was not aware of FirstNet or its mission at all. The tribal organizations we contacted provided various examples. For instance, four of the tribal organizations said that not all tribes have good relationships with officials from the state the tribe is located in, and thus working through the state is not always an effective way to engage tribes. Additionally, one tribal representative said that email updates do not constitute substantive communication and that tribes with limited resources will be less inclined to prioritize monitoring those emails if they do not believe they are otherwise being adequately engaged. Another tribal representative said that FirstNet's presentations sometimes focus too much on the 2012 Act, FirstNet's authorities, and the state opt-in or opt-out process rather than on information of interest to the tribes (like technical issues). Three of the five tribal organizations expressed concern that the FirstNet Board does not have and has never had a representative who is a tribal member. Furthermore, we heard from two SPOCs with tribal populations that tribes are concerned about FirstNet's consultation through the SPOCs when tribal populations span multiple states, noting that there is uncertainty about how such tribes will be treated if one state opts in to FirstNet's state plan, but another opts out. The tribal organizations we contacted cited various suggestions for how FirstNet could improve its tribal consultation efforts. Among these suggestions, all five emphasized that tribal members who have first-hand knowledge of tribes' experiences should represent tribal views directly among FirstNet's decision makers, such as those on the FirstNet Board. However, one tribal representative said that he believed FirstNet was more concerned with staying on schedule than fully addressing tribal concerns and suggestions.

FirstNet officials have noted that FirstNet is required to consult with tribes through the SPOCs regarding requirements under the 2012 Act, and that it has utilized other mechanisms to support those efforts, such as the PSAC's Tribal Working Group. Nevertheless, several federal agencies have identified seeking a full understanding of tribal concerns—and reaching consensus where possible—as a key principle of effective tribal communication, noting that agencies should adapt to changing circumstances, contemplate creative problem solving, identify options for

addressing concerns, and exhaust alternatives to achieve mutually agreeable solutions.<sup>41</sup> In identifying this principle, they further noted that tribes considered communication to be effective when agencies took the time to understand the concerns, and that instead of assuming they understand the tribal position, agencies should seek clarification of tribal views. Federal internal-control standards also state that an entity should periodically evaluate its methods of communication so that it has the appropriate tools to communicate with external stakeholders.<sup>42</sup> Given tribal stakeholders' concerns with FirstNet's efforts to engage them, exploring these concerns could help FirstNet better or more fully understand the concerns and take action, as needed, to address them.

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## FirstNet Has Established a Framework to Finance the Network

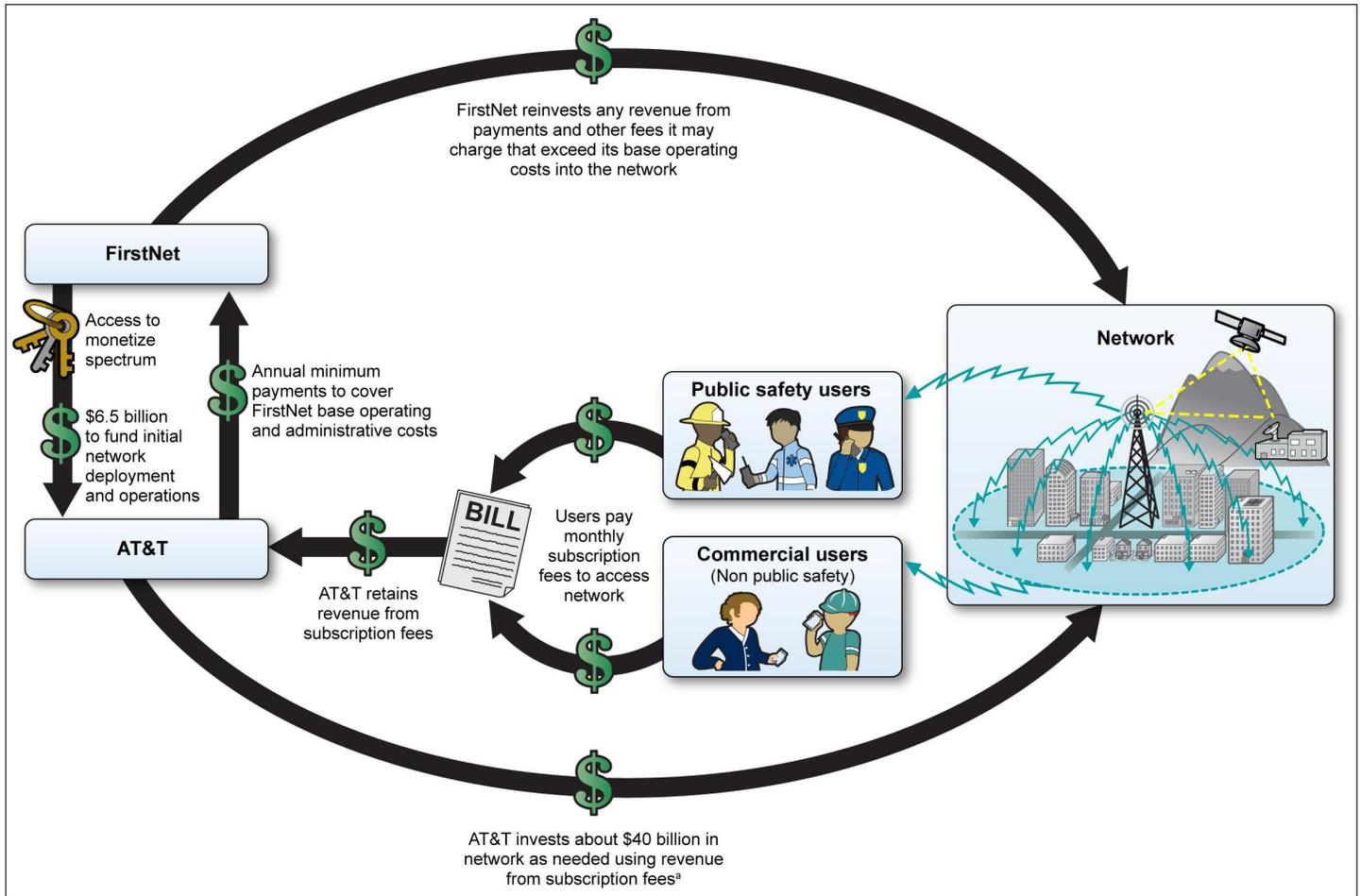
To meet the financial requirements established in the 2012 Act, FirstNet has established a financial framework. This framework focuses on leveraging FirstNet's spectrum through the use of payments and fees with the aim of ensuring that the network is financially sustainable over the life of the contract and that FirstNet sustains self-funding operations. These payments and fees are depicted in figure 3 and described below.

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<sup>41</sup>U.S. Departments of the Interior, the Army, and Justice, *Improving Tribal Consultation and Tribal Involvement in Federal Infrastructure Decisions* (January 2017).

<sup>42</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

Figure 3: First Responder Network Authority's (FirstNet) Financial Framework



Source: GAO analysis of FirstNet information. | GAO-17-569

<sup>a</sup>AT&T's expected investment in the network includes its annual minimum payments to FirstNet.

- FirstNet payments to the contractor:** FirstNet plans to pay AT&T up to \$6.5 of its \$7 billion over the next 5 years to build and operate the network. FirstNet will pay AT&T to execute various task orders, such as task orders for deploying and operating the network core, the development and delivery of state plans and deployment of state RANs, among other things. FirstNet will issue payments to AT&T only after it accepts that AT&T's solutions are achieving certain capability milestones.
- Contractor payments to FirstNet:** AT&T will be required to make annual payments to FirstNet over the length of the contract. FirstNet expects the payments to cover its estimated base operating and

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administrative costs such as personnel costs, costs for establishing a network reinvestment reserve fund, recapitalization of the network, and acquisition support and planning. FirstNet's RFP identified phased payment levels that increase over a 25-year period, and AT&T may make payments to FirstNet equal to or in excess of these levels.<sup>43</sup> As FirstNet evaluates AT&T's performance over the life of the contract, FirstNet may also assess a "disincentive payment" if AT&T fails to meet certain performance expectations regarding public safety users' adoption of the network.

- **Fees:** FirstNet and AT&T can charge users of the network subscription fees to generate revenue.<sup>44</sup> In particular, public safety users will be charged fees to use the network, much as consumers currently pay for their use of commercial networks, and AT&T will assess, collect, and retain these fees. FirstNet estimates that the U.S. public-safety mobile broadband market represents approximately 14.6-million public-safety users.<sup>45</sup> AT&T may also monetize FirstNet's spectrum by using the excess network capacity (i.e., capacity not being used by the public safety users) for non-public-safety commercial users and charging these users fees, and, in turn, FirstNet will charge AT&T fees for use of the excess capacity.<sup>46</sup> FirstNet has stated that the revenues obtained through leasing this excess capacity will be critical to funding the building, operation, maintenance, and upgrades to the network. AT&T may retain revenue from both the public safety and commercial users. FirstNet may also charge a lease fee to AT&T for leasing the excess capacity to commercial users, a fee related to network equipment or infrastructure, and a fee for states that assume RAN responsibilities to

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<sup>43</sup>AT&T will be required to begin making these payments once FirstNet awards the task orders for the RANs in each state. These payments will be adjusted for each state that assumes RAN responsibilities.

<sup>44</sup>The 2012 Act requires NTIA to annually review the fees assessed, and such fees may only be assessed if approved by NTIA. Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §§ 6208(a)(1), (2), 126 Stat. 156 (2012).

<sup>45</sup>FirstNet's market research found that an estimated 4 million of these users operate in the law enforcement, fire, emergency medical services, and other related government agencies and the remainder are considered to be "other public safety users". FirstNet delineates public safety users into two "primary" user groups: a preferred primary user group including law enforcement, fire, and emergency medical services users and an extended primary user group consisting of other public safety users such as public works personnel and highway and transportation officials.

<sup>46</sup>The 2012 Act allows for this commercial use. Pub. L. No. 112-96, § 6208(c), 126 Stat. at 216.

use FirstNet's core network.<sup>47</sup> Any revenue generated from these fees in excess of FirstNet's operating costs—with the exception of revenue AT&T is allowed to retain from public safety and commercial user fees—must be reinvested in the network's construction, maintenance, operation, improvements, or to advance or enhance public safety communications.

To finance the network, FirstNet has stated that AT&T must obtain optimal value from the excess spectrum capacity. FirstNet has publicly stated that its license to use the 20 MHz of spectrum (located in the 700 MHz spectrum band) could represent billions of dollars of value and that its spectrum is its most valuable asset. There are no publicly available estimates of the exact value of FirstNet's spectrum, but we have previously found that various factors can affect the price or value of licensed spectrum. For example, the price or value of licensed spectrum could change depending on expectations about supply or how much spectrum is available for licensing now and will be in the future. Factors related to the demand for wireless services could also affect the price or value. Some of these factors may include the level of demand for licensed spectrum by the wireless industry for broadband applications, industry expectations about net return or profitability over time in using the license, whether the spectrum will be shared or cleared of other users, and certainty of the license's availability.<sup>48</sup> Other entities have published estimates of spectrum supply value using data from the results of previous FCC spectrum auctions. For example, economists with the Brattle Group, an economic consulting firm, published a report in 2015 that estimated the value of available supply in the 700 MHz spectrum.<sup>49</sup> The report estimated that 58 MHz of paired 700 MHz spectrum was valued at \$60 billion.<sup>50</sup> We did not evaluate the accuracy of this estimate.

Even with the establishment of this framework, substantial unknowns remain regarding how many public safety users will adopt the network (as

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<sup>47</sup>FirstNet views these fees as distinct and separate, and may assess them individually or cumulatively.

<sup>48</sup>GAO, *Spectrum Management: Federal Relocation Costs and Auction Revenues*, [GAO-13-472](#) (Washington, D.C.: May 22, 2013).

<sup>49</sup>Coleman Bazelon and Giulia McHenry, The Brattle Group, Inc., *Mobile Broadband Spectrum: A Vital Resource for the American Economy* (May 11, 2015).

<sup>50</sup>With a paired-spectrum band, a portion of the frequencies (usually half) are used to transmit from a base station to a mobile device, and the remainder of the band is used for mobile-to-base-station transmissions.

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described further below), the extent to which AT&T will be successful in monetizing the spectrum to retain revenue from the network's commercial users, and the extent to which this revenue will be sufficient or appropriate in relation to the capital needed to build, operate, and maintain the network. Therefore, at this time we could not assess the viability of this framework and whether FirstNet's structures for overseeing the contractor's use of the spectrum for excess capacity will be appropriate. Further, the extent to which FirstNet will evaluate the effectiveness and appropriateness of this financial framework as the network—and use of the network by both public safety and commercial users—evolves is unclear.

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## Selected Stakeholders Cited Various Challenges Ensuring the Network's Reliability, Security, and Interoperability, but FirstNet Is Conducting Efforts to Address Them

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### FirstNet Faces a Variety of Technical Challenges and Priorities

The 33 stakeholders we contacted cited a wide range of topics related to the network's reliability, security, and interoperability as priorities or potential challenges for FirstNet, all of which could impact how many public safety users adopt the network.<sup>51</sup> For example:

- **Coverage:** Numerous stakeholders noted the importance or difficulty of providing reliable network coverage. For instance, stakeholders raised concerns that providing coverage to rural areas, in buildings, or underground (such as in subway stations) will be difficult, which could lead to coverage gaps. One public safety communications official said that within one department, some officers could be assigned to a portion of the state that has good network coverage and that the others could be assigned to a portion that has inadequate coverage. He questioned whether that department would have to maintain backup capabilities for those assigned to the areas with inadequate coverage. Another public safety official said a breakdown in

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<sup>51</sup>Throughout this report we refer to "a few" of the stakeholders if officials from 3-5 entities, "some" if 6-9, "many" if 10-14, and "numerous" if 15 or more expressed the view.

communications because of the lack of a network signal in an area with poor coverage would be unacceptable during an emergency.

- **User priority and identity frameworks:** Numerous stakeholders noted the importance or difficulty of implementing robust frameworks for managing user priority and preemption, or identity, credentialing, and access management. For instance, an official representing state governments said that during an emergency there will need to be pre-determined measures and protocols in place to ensure that the right public-safety users have priority access over users not involved in responding to the emergency. A federal public safety communications official said that among different users on the network, there will need to be common credentialing requirements that are flexible enough to facilitate interoperability and roaming by different users in different states while remaining robust enough to ensure adequate network security.
- **Resiliency and cybersecurity:** Numerous stakeholders noted the importance or difficulty of ensuring the network's overall resiliency and, for many, cybersecurity. For instance, stakeholders raised concerns about reinforcing the network (to ensure, for example, that it can withstand disasters such as hurricanes and earthquakes), keeping network sites physically secure, and establishing network redundancies. One official representing local governments said that having a large concentration of sensitive public-safety information traveling through one network may be viewed as a target for cybersecurity attacks.
- **Integrating RANs:** Some stakeholders noted the importance or difficulty of integrating RANs from states that choose to opt out of FirstNet's state plan. In general, these stakeholders expressed concern about interoperability issues that may be introduced by states that assume their own RAN responsibilities. For instance, a state government official expressed concern about FirstNet's ability to enforce technical updates related to security and interoperability of the network in these states, which could result in a lack of interoperability.

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## FirstNet and the PSCR Have Begun Research and Other Efforts That Address Challenges

Both FirstNet and the PSCR have begun research and other efforts to help ensure the reliability, security, and interoperability of the network and address the challenges raised by stakeholders.

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## FirstNet

FirstNet has taken a variety of planning-related steps in efforts to ensure the network is reliable, secure, and interoperable, as described below. FirstNet officials have also highlighted that AT&T must comply with minimum technical requirements, including the interoperability requirements issued by FCC, and that LTE is the wireless technical standard for the network, which, as a result, enforces a certain degree of interoperability.<sup>52</sup>

- **Issuing requests for information (RFI) and special notices:** FirstNet has issued 13 RFIs and 2 special notices to obtain input from state and local governments, private companies, public safety entities, and other interested parties on several technical matters and prepared analyses of the responses. Issued from May 2013 through September 2014, the RFIs focused on specific, individual components of the network (such as the network core and RANs, devices, applications, antennas, and satellites) and on the overarching network solution. FirstNet's April 2015 special notice accompanied a draft RFP, which also allowed for feedback on the overarching network solution. In October 2015, FirstNet issued a second special notice that outlined the key considerations and concerns for how the network's cybersecurity framework should be designed, established, and sustained. FirstNet received hundreds of responses to these RFIs and the special notices and, according to FirstNet officials, has used that information to inform its technical planning and the objectives in the RFP.
- **Drafting whitepapers and market research reports:** FirstNet has prepared almost 20 whitepapers and other such documents (such as position papers and technical briefs) to help its technical team explore potential problems, identify available or needed solutions, and make recommendations on potential strategies. Prepared from 2014 through 2016, these documents covered a broad range of topics, such as requirements for network users' identities, credentialing, and access management as well as user priority and preemption frameworks; areas related to resiliency and security (such as applications security and certification, device security threats and solutions, and the process for devices to receive approval to operate

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<sup>52</sup>FCC Technical Advisory Board for First Responder Interoperability, *Recommended Minimum Technical Requirements to Ensure Nationwide Interoperability for the Nationwide Public Safety Broadband Network* (Washington, D.C.: May 22, 2012).

on the network); and RAN resiliency and redundancy. FirstNet has also conducted market research to understand industry capabilities and identify capability gaps. For example, in 2013 FirstNet officials began meeting with many private companies (such as device and equipment manufacturers, telecommunications providers, and applications developers) to understand available technologies and market trends. In 2015, FirstNet summarized this information into a market research report.

- **Opening a test lab:** In November 2016, FirstNet opened an Innovation and Test Lab at its technical headquarters in Boulder, Colorado. According to FirstNet documentation, FirstNet plans to use—and allow AT&T to use—the lab to test public safety features (such as priority access), devices, and applications before deploying them on the network to ensure they comply with network requirements and function properly. In the future, FirstNet also plans for the lab to serve as a training and experience center for hands-on training, demonstration, and user evaluation of future network technologies and applications.
- **Leveraging the PSAC:** Since 2014, FirstNet has requested that the PSAC explore issues on its behalf and provide feedback on these issues from the viewpoint of the public safety community and its needs. To conduct this work, as of March 2017, the PSAC has convened nine task teams and issued reports and recommendations covering topics such as defining potential network user priority and preemption and identity management frameworks, and areas related to resiliency and security, such as reinforcing the network and retaining local control of it while maintaining security. For example, in 2015 the PSAC’s priority and preemption task team developed usage scenarios to illustrate the different jurisdictions and disciplines that would be engaged in a potential public-safety incident, the applications required, and the application usage projections for these incidents. Using these scenarios, the team provided recommendations on an initial framework for network user and application prioritization.<sup>53</sup>
- **Developing network policies:** Using the information generated from these various efforts, FirstNet has begun drafting the network policies that will establish the network operations structure, including the

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<sup>53</sup>FirstNet has also leveraged expertise from other stakeholders on technical matters. For example, FirstNet hosted 16 state and regional task-team meetings to gather information from public safety officials regarding a potential user priority and preemption framework.

technical and operational requirements for the network core and RANs, network management standards and procedures, and compliance requirements related to network management, operation, and use, among other things. FirstNet has stated that these policies will constitute the basis for network interoperability and will establish criteria for FCC and NTIA to evaluate the alternative RAN plans for any states that choose to opt out. FirstNet plans to refine and finalize these policies (as well as the actual technical solutions that will be used) after post-award discussions between FirstNet and AT&T and as state plans are developed and governors make their opt-in or opt-out decisions. FirstNet also plans to periodically update its policies throughout the 25-year life of the contract.

### PSCR

In 2014, FirstNet entered into interagency agreements with NIST and NTIA, funding their PSCR program to conduct research on FirstNet's behalf. Since then, PSCR has conducted research in three main areas, including LTE standards development, testing and evaluation of potential network features, and network simulation and modeling. For example, as part of its work to develop LTE standards, PSCR has represented FirstNet before the international bodies that develop system specifications and standards for cellular telecommunications technologies. In this role, the PSCR works to get public safety requirements incorporated into the development of LTE standards. As part of its work to test and evaluate network features, the PSCR has researched technologies that will allow users on the network to use one set of log-in credentials (e.g., username and password) to access multiple applications. The agreement between FirstNet and NIST expired in March 2017 and the agreement between FirstNet and NTIA is set to expire in December 2017. PSCR officials explained that because PSCR will now be accelerating other research activities that support FirstNet (as described below) and because FirstNet recently opened its own Innovation and Test Lab, they do not anticipate renewing this direct-funding arrangement.

In addition to the work funded by FirstNet, PSCR is planning for and implementing other research activities to support FirstNet using the \$300 million in funds provided to NIST by the 2012 Act. The 2012 Act required that NIST conduct research and assist with the development of standards, technologies, and applications to advance wireless public-safety communications, including using these funds to research and advance public-safety, mission-critical voice technologies and the coexistence of LMR and LTE networks. Under this authority, PSCR has

focused on three additional research areas with these funds, including location-based services, public-safety-data analytics, and device user interfaces. In January 2016, PSCR launched its Public Safety Innovation Accelerator Program to support these research activities, and in December 2016, NIST issued a funding announcement to fund research in the mission-critical voice, location-based services, and public-safety-data analytics research areas. The funding announcement also seeks to fund research related to three additional areas that PSCR identified as crosscutting to all its public safety research.<sup>54</sup> PSCR also plans to use the National Aeronautics and Space Administration’s (NASA) “prize challenge” model to implement these research activities.<sup>55</sup> In June 2016, NIST entered into an interagency agreement with NASA, which will allow NIST to access the expertise in NASA’s Center of Excellence for Collaborative Innovation to launch a series of prize competitions in support of FirstNet. Finally, in addition to conducting its own research, issuing grants, and hosting prize challenges, PSCR plans to conduct collaborative research with other parties under Cooperative Research and Development Agreements.<sup>56</sup>

We have previously identified key phases of a sound research process based on key elements of sound research programs identified by leading national organizations, including the American Evaluation Association and the National Academy of Sciences.<sup>57</sup> While PSCR has yet to obligate much of its research funds (as described above), we found that at this stage its research process generally aligns with these key phases. For example, PSCR has established a structured process for developing research priorities that includes both internal and external stakeholders,

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<sup>54</sup>These areas include public-safety communications demand modeling, developing research and prototyping platforms, and evaluating and enhancing the resilience of public safety systems.

<sup>55</sup>Generally, in prize competitions or challenges, federal agencies identify a problem to solve or a specific goal to achieve and ask members of the public to submit potential solutions. The agency evaluates these proposals and provides a monetary or non-monetary award to selected winners. According to NIST, NIST’s general authority to conduct prize challenges is 15 U.S.C. § 3719.

<sup>56</sup>Under 15 U.S.C. § 3710a(d)(1), a Cooperative Research and Development Agreement is an agreement between one or more federal laboratories and one or more non-federal parties—which may include state or local governments, industrial organizations, public and private foundations, non-profit organizations (including universities) and other persons—to conduct specified research and development activities.

<sup>57</sup>[GAO-11-285](#).

identified criteria it uses to help it select the research areas to fund, procedures to help it guide and monitor its research, and plans to disseminate the results of its research as appropriate. Similarly, while FirstNet is not a federal research agency, it has determined its research priorities to date based on its network-planning needs and in consultation with internal and external stakeholders, worked with the PSCR to define criteria to help it select research areas, and disseminated its research results where appropriate. FirstNet plans to work with AT&T to develop plans and priorities for the next phase of research required for the network, post contract award.

The majority of stakeholders we contacted were satisfied with the planning efforts to ensure the reliability, security, and interoperability of the network. However, many stakeholders also said that there is much remaining uncertainty about how this will be implemented in practice. While FirstNet awarded the contract in March 2017, as described above, full details about its content were not publicly available as of April 2017, and may not be fully available to relevant stakeholders until state plans are provided. According to FirstNet officials as of April 2017, FirstNet was evaluating what information and contract details should be made public. In addition to addressing the various challenges in ensuring the network is reliable, secure, and interoperable, one public safety official we contacted told us that FirstNet and its contractor will have to balance the costs associated with implementing features that make the network reliable and secure with the need to establish compelling and competitively priced service packages and fees that will encourage user adoption.<sup>58</sup> Indeed, numerous stakeholders we contacted cited the cost of subscribing to the network as a key factor affecting user adoption, noting that the pricing must be comparable to what they pay for commercial service now, that budgets are constrained in the public safety community, or that local governments do not want costs to increase. Further, commercial carriers could choose to compete with FirstNet, which could also affect adoption of the network. FirstNet has stated that it expects AT&T to provide services at a competitive price and deliver affordable, high-quality services that will encourage public safety users to adopt the network. Ultimately—because the network must be self-funding and FirstNet has stated that revenue obtained from network users will be critical to this funding—the success of the network depends on whether FirstNet and AT&T generate enough revenue to operate it over the long

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<sup>58</sup>For additional discussion of factors that may affect user adoption, see [GAO-15-407](#).

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term and whether public safety users adopt it, no matter how reliable and secure it is.

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## FirstNet Is Establishing Contract Oversight Mechanisms but Lacks a Full Assessment of Staffing Needs for Its Oversight Workforce

FirstNet must manage and oversee the implementation of the network contract to build, operate, and maintain the network.<sup>59</sup> In addition, FirstNet is required to conduct ongoing reviews and monitoring of the management and operation of the network.<sup>60</sup> Federal internal-control standards also state that an entity's management retains responsibility for the performance of processes assigned to service organizations (such as contractors) and that management should hold these organizations accountable for their performance.<sup>61</sup>

To lead its oversight and enforcement efforts, FirstNet has established offices to administer—which includes all activities related to managing and overseeing—different aspects of the network contract. In June 2016, FirstNet established the Network Program Office to manage the network contract, including overseeing the contractor's performance, conducting project schedule and risk management, and facilitating quality assurance of contract deliverables, among other things. For example, this office facilitates the receipt, review, and acceptance of contract deliverables and maintains an integrated schedule that reflects tasks, timelines, and progress. In 2016, FirstNet also established the Office of the Chief Procurement Officer to provide full acquisition support for all of FirstNet's offices and any other contractual actions required by FirstNet.<sup>62</sup> As of

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<sup>59</sup>Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6206 (b)(1)(D), 126 Stat. 156 (2012).

<sup>60</sup>Pub. L. No. 112-96, § 6206 (c)(1)(E), 126 Stat. at 213.

<sup>61</sup>[GAO-14-704G](#).

<sup>62</sup>FirstNet officials told us procurement warrant authority had been granted to this office in November 2016. Regarding the Network Program Office, FirstNet told us it has also identified experienced staff to serve as Contracting Officer Representatives to perform contract monitoring and quality assurance activities. The officials said a dedicated career manager also ensures that these representatives complete appropriate training and apply for the appropriate level of acquisition certification required to manage and oversee its acquisition activities.

April 2017, FirstNet's Network Program Office had 25 full-time staff and its Office of the Chief Procurement Officer had 17 full-time staff. FirstNet has also established cross-functional task teams led by the Network Program Office. These teams include staff from across different units within FirstNet. The teams have varying responsibilities, including supporting and overseeing AT&T in executing specific elements of the contract. As described above, Interior is also supporting FirstNet in administering the contract; this support is being provided through an interagency agreement between FirstNet and Interior. This agreement expires in December 2018 and specifies that Interior will provide this support until FirstNet makes a formal request to assume full responsibility for administering the contract. FirstNet officials told us that they plan to make this request at an unspecified date in the future, when they have been granted the proper procurement authorities by Commerce, which they are in the process of obtaining. Stakeholders we contacted emphasized the importance of FirstNet's ability to successfully assume a new oversight role once a contract is awarded. For example, a few public safety stakeholders said it will be important for FirstNet to operate as an independent and agile organization in a government environment while also being mindful of the needs of the public safety community.

Additionally, FirstNet is developing many internal policies and procedures to assist with managing and overseeing contract activities and AT&T's performance. FirstNet has developed a Contract Administration Plan that FirstNet and Interior will use and continually update for the overall administration of the network contract. Regarding contractor performance, FirstNet plans to use a Quality Assurance Surveillance Plan (QASP), which will be updated as required over the life of the contract, as a primary mechanism to measure and assess whether the contractor's performance is in accordance with the terms of the contract. In its RFP, FirstNet identified criteria that the QASP must address, including the methods of monitoring contract performance, expectations for performance deliverables, remedies such as disincentive penalties, and corrective action plans. The QASP includes elements that AT&T will be evaluated on, such as expected and actual project costs and schedule, project status, public safety user adoption goals, network performance, device and application usage, and financial sustainability goals. A few stakeholders we contacted said that it will be important for FirstNet to maintain a strong relationship with the contractor, with another stakeholder stating FirstNet will need to find an appropriate balance between enforcing remedies while working with the contractor through performance issues. Additionally, some stakeholders we contacted said sharing an appropriate level of performance information with the public on

the contractor’s progress will also be critical for FirstNet to develop a sense of trust with the public safety community.

Various key sources we reviewed—including federal and Commerce acquisition regulations, and government, academic, and industry guidance on acquisition and project management—identified the development of monitoring policies, procedures, and plans as a key practice for acquisition and contract oversight. These sources also identified key actions that contribute to the successful implementation of this practice that organizations could take to ensure they effectively plan for and execute contract oversight.<sup>63</sup> We compared FirstNet’s efforts with these key actions as shown in table 1 and described further below.

**Table 1: The First Responder Network Authority’s (FirstNet) Efforts to Develop Contract Oversight Mechanisms Compared with Key Actions That Contribute to Effective Contract Oversight, as of April 2017**

Key actions	FirstNet’s efforts	How FirstNet’s efforts align with key action <sup>a</sup>
Identify the office and individuals responsible for surveillance	FirstNet established the Network Program Office to manage and oversee the network contract and the Office of the Chief Procurement Officer to provide support administering the contract.	Align
Assess resources (including people and funding) needed, and plan for and assign adequate resources	FirstNet’s Office of the Chief Procurement Officer conducted a workforce analysis and its Network Program Office prepared an initial Workforce Analysis Plan, but this plan does not extend beyond the immediate and short term.	Somewhat align
Develop a mitigation plan that describes how the government will monitor, control, and mitigate risk of contract performance	FirstNet developed a Contract Administration Plan that includes information on contract risk mitigation, including a problem resolution and escalation process should issues arise.	Align
Develop a quality assurance surveillance plan	FirstNet plans to use a Quality Assurance Surveillance Plan to ensure the contractor has performed in accordance with the performance metrics and standards specified in the contract. The plan is to be updated as needed during the life of the contract.	Align

<sup>63</sup>Commerce, *Selecting Contract Types, Commerce Acquisition Manual*, 1316.1, 6.3 (March 2016); GAO-16-593; GAO-13-292; GAO-04-394G; Software Engineering Institute/Carnegie Mellon, *Capability Maturity Model<sup>®</sup> Integration (CMMI<sup>®</sup>) for Acquisition*, Version 1.3, CMU/SEI-2010-TR-032 (Pittsburgh, PA.: November 2010); Project Management Institute, Inc., *The Standard for Program Management—Third Edition* (Newtown Square, PA: 2013); Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge (PMBOK<sup>®</sup> Guide)—Fifth Edition* (Newtown Square, PA: 2013). PMBOK is a trademark of Project Management Institute, Inc.

Key actions	FirstNet's efforts	How FirstNet's efforts align with key action <sup>a</sup>
Develop measurable performance standards and the method of assessing contractor performance	FirstNet plans to use measurable performance standards and methods of assessing the contractor's performance and performance ratings to rate the contractor.	Align
Develop inspection and quality requirements, metrics, and checklists	FirstNet plans for the contractor's deliverables (e.g., supplies and services) to be inspected by FirstNet and/or the Department of the Interior (which provides acquisition support to FirstNet), and FirstNet plans to use quality criteria to review each deliverable (such as metrics to assess the deliverable against).	Align
Maintain approved plans that include expected cost and schedule milestones	FirstNet plans for the contractor to report cost and schedule information including reports on the actual and planned network costs, schedule variance of achieving key milestones, user forecasting, revenue, and cash cost per public safety user, among other things. FirstNet plans to oversee and approve schedule management, including resources.	Align
Establish progress and performance reporting requirements in the supplier agreement	FirstNet plans for the contractor to provide various status and other reports, such as a monthly status report at the end of each month detailing the status of major projects, among other things.	Align
Document and share the overall quality policy with all program components	FirstNet developed a process that identifies the offices responsible for reviewing contractor deliverables and the steps the offices should take to monitor the contractor's performance and address any performance concerns.	Align
Develop policies, procedures, and documentation for planning, managing, expending, and controlling costs	FirstNet developed a detailed process to review and approve contractor invoices for payment.	Align

Source: GAO analysis of FirstNet documentation and acquisition and contract oversight principles in government, academic, and industry documents. | GAO-17-569

<sup>a</sup>Alignment is based on our assessment of FirstNet's planning and processes, and not on the implementation of those plans and processes, given that FirstNet's implementation had not fully begun as of April 2017.

Although FirstNet has developed an initial Workforce Analysis Plan for its Network Program Office, it has not fully planned for or assessed the long-term staffing needs of this workforce. Planning for and assigning adequate resources, including people, and performing an assessment of the resources needed to oversee projects is one of the key actions we identified for planning and executing effective contract oversight. As described above, FirstNet plans to assume full responsibility for administering the contract at an unspecified date in the future. However, FirstNet's initial analysis of the workforce needs in its Network Program Office assesses the needs in what FirstNet describes as the immediate and short term, and does not reflect long-term projections of staffing needs, including after FirstNet assumes full contract-administration responsibilities and completely transitions these responsibilities from Interior to FirstNet. FirstNet's analysis indicates that it is unclear what the

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Network Program Office's needs will be past the short term and that long-term staffing needs cannot be determined because—as of the writing of the analysis—the contract award was pending. In addition, a few public safety stakeholders we contacted described possible workforce challenges for FirstNet. FirstNet has also previously publicly acknowledged that it has faced challenges in rapidly hiring new staff due to, in part, the federal hiring process and that staff departures at both the program and contractor level can negatively affect network performance. Indeed, we have previously reported that agencies that rely heavily on the use of contractors and acquisitions to accomplish their missions stand to benefit greatly by planning strategically for their acquisition workforces.<sup>64</sup> Performing a long-term staffing assessment for its Network Program Office would place FirstNet in a better position to fully understand its staffing needs and respond to staffing changes and risks as it assumes full responsibility for administering the contract in the future. Given that the network contract has now been awarded, FirstNet may be in a better position to fully assess these needs.

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## Conclusions

Since 2015, FirstNet has continued its efforts to conduct outreach and consult with state and local, federal, and tribal stakeholders through a variety of mechanisms. Regarding tribal outreach and consultation specifically, FirstNet has consulted with tribes through the SPOCs as required by the 2012 Act, hired two tribal outreach liaisons, and established a Tribal Working Group within the PSAC. However, tribal stakeholders we contacted expressed concern that FirstNet has not fully engaged in effective communication with tribal organizations noting, for example, that individuals who have first-hand knowledge of tribes' experiences are not able to represent tribal views directly among FirstNet's key decision makers. Given that the PSAC's Tribal Working Group is charged with providing FirstNet advice on inclusive consultation strategies and advises FirstNet on tribal outreach and education, this group is well-positioned to document tribal concerns and propose actions to address those concerns. Fully exploring and proposing actions, as appropriate, to address tribal stakeholders' concerns could help to

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<sup>64</sup>GAO, *2010 CENSUS: Census Bureau Generally Follows Selected Leading Acquisition Planning Practices, but Continued Management Attention Is Needed to Help Ensure Success*, [GAO-06-277](#) (Washington, D.C.: May 18, 2006).

improve FirstNet's relations with the tribes and ensure that FirstNet is leveraging the Tribal Working Group's expertise.

FirstNet awarded a 25-year contract to AT&T for the construction, operation, and maintenance of the nationwide public-safety broadband network and is required by the 2012 Act to oversee the contract. Although FirstNet has established numerous contract oversight mechanisms, we found FirstNet could strengthen its planned oversight by assessing its long-term staffing needs. As of April 2017, while it had assessed immediate and short-term needs, FirstNet had not conducted long-term projections of staffing needs for the Network Program Office, which will perform essential contract-administration functions such as overseeing the contractor's performance and facilitating quality assurance of contract deliverables. As a result, FirstNet cannot ensure that it will have sufficient resources to handle increases in contract oversight responsibilities, especially as it assumes full responsibility for administering the contract from Interior. Absent a long-term staffing assessment for the Network Program Office, FirstNet may not fully understand its staffing needs and risks being poorly positioned to respond to staffing challenges and risks going forward.

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## Recommendations for Executive Action

To more fully address stakeholder concerns and help ensure FirstNet's resources reflect expected changes in responsibilities, FirstNet should take the following two actions:

- request that the PSAC's Tribal Working Group fully explore tribal concerns and propose actions, as needed, to address those concerns, and
- assess the long-term staffing needs in the Network Program Office prior to requesting to assume full responsibility from Interior for administering the network contract.

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## Agency Comments

We provided a draft of this report to FirstNet and Commerce for their review and comment. FirstNet provided written comments (with a cover letter from Commerce), which are reprinted in appendix II. FirstNet and

NIST (within Commerce) also provided technical comments that we incorporated as appropriate.

In its written comments, FirstNet stated that it agreed with all of our recommendations and noted steps it plans to take and has begun to take to implement them. Regarding tribal stakeholders' concerns, FirstNet stated it is consistently looking for ways to build strong relationships with tribes. FirstNet further stated that its efforts to support and engage with tribes will continue and that it will develop and adopt an organization-wide tribal consultation policy. Regarding assessing long-term staffing needs, FirstNet noted that it has begun taking steps in this regard. For example, FirstNet said that—building on its initial workforce analysis—the Network Program Office has begun an effort to complete and implement a long-term staffing plan.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the appropriate congressional committees, FirstNet, the Secretary of Commerce, and other interested parties. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or [goldsteinm@gao.gov](mailto:goldsteinm@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

Sincerely yours,



Mark L. Goldstein  
Director  
Physical Infrastructure Issues

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## Appendix I: Objectives, Scope, and Methodology

This report (1) examines the First Responder Network Authority's (FirstNet) efforts to establish and finance the nationwide public-safety broadband network; (2) describes stakeholder views on network reliability, security, and interoperability challenges FirstNet faces and its research and other efforts to address them; and (3) assesses FirstNet's plans to oversee the deployment of the network by its network contractor.

To examine FirstNet's efforts to establish and finance the network, we reviewed FirstNet's requests for information, notices, board-meeting materials, presentations to stakeholders, fact sheets, press releases and blog posts, annual reports to Congress, financial reports, written responses to our questions from FirstNet officials, and other documentation. In particular, we reviewed the Middle Class Tax Relief and Job Creation Act of 2012 (the 2012 Act)—which established FirstNet—and the request for proposal (RFP) that FirstNet issued in January 2016 to select the contractor that will build, operate, and maintain the network.<sup>1</sup> We did not review the full network contract because FirstNet awarded the contract in March 2017, and as of April 2017, FirstNet was still finalizing and engaging in post-award discussions with AT&T. We also reviewed documentation from other federal entities involved in FirstNet's efforts or oversight of FirstNet's efforts, including the Department of Commerce (Commerce) and its National Telecommunications and Information Administration (NTIA), National Institute of Standards and Technology (NIST), and Office of Inspector General; the Federal Communications Commission (FCC); and the Department of Homeland Security (DHS). For example, we reviewed NTIA's and FCC's notices related to the processes for states that choose to opt out of FirstNet's state plan. We focused on FirstNet's efforts to establish the network since April 2015, when we last reported on FirstNet's progress.<sup>2</sup> We compared FirstNet's efforts to respond to tribal stakeholders' concerns with the applicable key principle of effective tribal

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<sup>1</sup>Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No 112-96, 126 Stat. 156 (2012).

<sup>2</sup>GAO, Public-Safety Broadband Network: *FirstNet Should Strengthen Internal Controls and Evaluate Lessons Learned*, [GAO-15-407](#) (Washington, D.C.: Apr. 28, 2015).

communication on federal infrastructure decisions developed by several federal agencies.<sup>3</sup> We also reviewed previous GAO reports and reports from the Congressional Research Service, the Congressional Budget Office, and private industry related to spectrum valuation to obtain context on the factors that affect spectrum value and the potential value of FirstNet's spectrum. Because we reviewed these for illustrative purposes, we did not assess the accuracy of these reports, nor did we assess the effectiveness and appropriateness of FirstNet's financial framework due to unknowns regarding the extent of the network's use. We interviewed officials from FirstNet and the other federal entities identified above to obtain further information on their efforts.

To describe FirstNet's efforts to address network reliability, security, and interoperability challenges, we reviewed the technical and research requirements in the 2012 Act and, in addition to the documentation described above, other documentation from FirstNet and those involved in its research activities related to the network's technical matters. For example, we reviewed FirstNet whitepapers, position papers, technical briefs, market research reports, summary analyses, and meeting summaries. We reviewed FirstNet's request letters to its Public Safety Advisory Committee (PSAC) and PSAC deliverables developed in response to these requests. We reviewed documentation from FirstNet's key research partner, the joint NTIA and NIST Public Safety Communications Research (PSCR) program, such as research road maps, summit and technical reports, and sample project plans or schedules. We also reviewed interagency agreements between FirstNet and NTIA, FirstNet and NIST, and NIST and the National Aeronautics and Space Administration regarding research support, and the December 2016 NIST public-safety research Federal Funding Opportunity. We reviewed relevant technical documentation from FCC, DHS's Science and Technology Directorate, the 3rd Generation Partnership Project (which develops technical standards for cellular telecommunications technologies), and PSAC member associations. For example, we reviewed FCC's report on the minimum technical standards for the

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<sup>3</sup>U.S. Departments of the Interior, the Army, and Justice, *Improving Tribal Consultation and Tribal Involvement in Federal Infrastructure Decisions* (January 2017). In this report, the Departments of Interior, the Army, and Justice note that the principles they identified should serve as a guide for federal agencies when their federal infrastructure projects may impact tribes, and that their recommendations do not impose legally binding obligations on any federal agency.

network,<sup>4</sup> and the National Public Safety Telecommunications Council's report on maintaining public safety communications reliability and interoperability.<sup>5</sup> We interviewed Commerce, NTIA, NIST, PSCR, FCC, and DHS officials to obtain further context and information on their activities. We assessed the PSCR's and FirstNet's research activities against our previously identified criteria on key phases of sound research programs.<sup>6</sup>

To assess FirstNet's plans to oversee the deployment of the network by its contractor, we reviewed FirstNet documentation that describes its plans for oversight, such as the RFP to identify the requirements and oversight mechanisms that would be embedded in the network contract, draft network policies, the Contract Administration Plan, workforce analyses, and the interagency agreement between FirstNet and the Department of the Interior, which is conducting acquisition support for FirstNet. We reviewed key acquisition and contract oversight practices established in the Federal Acquisition Regulations, Commerce Acquisition Regulations, Commerce's acquisition manual,<sup>7</sup> prior GAO reports,<sup>8</sup> and

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<sup>4</sup>FCC, Technical Advisory Board for First Responder Interoperability, *Recommended Minimum Technical Requirements to Ensure Nationwide Interoperability for the Nationwide Public Safety Broadband Network* (Washington, D.C.: May 22, 2012).

<sup>5</sup>National Public Safety Telecommunications Council, *Maintaining Public Safety Communications Reliability and Interoperability in the 700 MHz Band* (Littleton, CO: October 2016).

<sup>6</sup>GAO, *Employment and Training Administration: More Actions Needed to Improve Transparency and Accountability of Its Research Programs*, [GAO-11-285](#) (Washington, D.C.: Mar. 15, 2011). In this report, we identified the key elements and phases of sound research programs based on guidelines developed by leading national organizations, including the American Evaluation Association and the National Academy of Sciences.

<sup>7</sup>Commerce, *Selecting Contract Types, Commerce Acquisition Manual*, 1316.1, 6.3 (March 2016).

<sup>8</sup>GAO, *Joint Information Environment: DOD Needs to Strengthen Governance and Management*, [GAO-16-593](#) (Washington, D.C.: July 14, 2016); GAO, *National Science Foundation: Steps Taken to Improve Contracting Practices, but Opportunities Exist to Do More*, [GAO-13-292](#) (Washington, D.C.: Mar. 28, 2013); GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, [GAO-04-394G](#) (Washington, D.C.: Mar. 1, 2004).

academic and industry leading practices.<sup>9</sup> We also reviewed federal standards for internal control.<sup>10</sup> We selected those practices (and the key actions that contribute to the successful implementation of the practices) that were most appropriate given FirstNet’s objectives-based RFP approach and the stage of the acquisition process FirstNet was in during the course of our review. For these same reasons, we assessed FirstNet’s contract oversight plans against the practice of developing monitoring policies, procedures, and plans (and, thus, the actions that relate to implementing that practice).

To obtain stakeholder views on all our objectives—particularly the challenges FirstNet faces—we interviewed a variety of stakeholders, as shown in table 2. We selected these stakeholders to obtain a variety of viewpoints from a cross section of stakeholder interests. For example, we interviewed PSAC member associations that represent different levels of government and public safety disciplines; the tribal organization that serves as the representative congress of American Indians and Alaskan Natives and others that represent different geographic locations; and state officials from the “early builder” states that are building local and regional public-safety broadband networks and from states with varying levels of urban areas, rural areas, and tribal presence. We also reviewed documentation prepared and submitted by some of these stakeholders. Because stakeholders varied in their expertise with various topics, not every stakeholder provided an opinion on every topic. Additionally, in discussing FirstNet’s consultation efforts with the tribal stakeholders we contacted, we focused on FirstNet’s consultation responsibilities as described in the 2012 Act, and not on tribal consultation responsibilities as described in the National Environmental Policy Act or National Historic Preservation Act. Throughout this report we refer to “a few” of the stakeholders if officials from 3-5 entities, “some” if 6-9, “many” if 10-14, and “numerous” if 15 or more expressed the view. These stakeholders’ views are not generalizable to those of all FirstNet stakeholders.

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<sup>9</sup>Software Engineering Institute/Carnegie Mellon, *Capability Maturity Model® Integration (CMMI®) for Acquisition*, Version 1.3, CMU/SEI-2010-TR-032 (Pittsburgh, PA.: November 2010); Project Management Institute, Inc., *The Standard for Program Management—Third Edition* (Newtown Square, PA: 2013); Project Management Institute, Inc., *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)—Fifth Edition* (Newtown Square, PA: 2013). PMBOK is a trademark of Project Management Institute, Inc.

<sup>10</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

**Table 2: Stakeholders Interviewed**

	<b>Stakeholder</b>
<b>Public safety and state and local government associations</b>	American Association of State Highway and Transportation Officials
	American Public Works Association
	Association of Public Safety Communications Officials
	International Association of Fire Chiefs
	Major Cities Chiefs Police Association
	National Association of Counties
	National Emergency Medical Services Management Association
	National Emergency Number Association
	National Governors Association
	National League of Cities
	National Public Safety Telecommunications Council
	National Sheriffs' Association
	U.S. Conference of Mayors
<b>Tribal organizations</b>	Affiliated Tribes of Northwest Indians
	Inter-Tribal Council of California
	Midwest Alliance of Sovereign Tribes
	National Congress of American Indians
	United South and Eastern Tribes
<b>Federal entities</b>	Department of Commerce, including the National Telecommunications and Information Administration and the National Institute of Standards and Technology, and their joint Public Safety Communications Research program
	Department of Homeland Security
	Federal Communications Commission
<b>State officials (such as government and public safety officials, Single Points of Contact to FirstNet, or public-safety broadband network early builder project representatives)</b>	Alaska
	Arizona
	California
	Colorado
	District of Columbia
	Michigan
	New Jersey
	New Mexico
	Oklahoma
	Texas
<b>Additional</b>	Andrew Seybold, telecommunications subject matter expert
	United Kingdom Home Office, Emergency Services Mobile Communications Programme

Source: GAO. | GAO-17-569

## Appendix II: Comments from the First Responder Network Authority



UNITED STATES DEPARTMENT OF COMMERCE  
The Secretary of Commerce  
Washington, D.C. 20230

June 2, 2017

Mr. Mark Goldstein  
Director, Physical Infrastructure  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Dear Mr. Goldstein:

Thank you for the opportunity to review and comment on the Government Accountability Office's draft report titled *Public Safety Broadband Network: FirstNet Has Made Progress Establishing the Network, but Should Address Stakeholder Concerns and Workforce Planning* (GAO-17-569, June 2017).

The report recommends that the First Responder Network Authority (FirstNet) request that the PSAC's Tribal Working Group fully explore tribal concerns and propose actions, as needed, to address those concerns. FirstNet agrees with this recommendation and will work through the PSAC's Tribal Working Group to fully explore tribal concerns and address those concerns.

I have enclosed FirstNet's comments on the draft report. FirstNet will continue to explore tribal stakeholders' concerns and assess the long-term staffing needs in the Network Program Office prior to requesting to assume full responsibility for administering the network contract from Interior.

If you have any questions, please contact Uzoma Onyeije at (571) 665-6142.

Sincerely,

  
Wilbur Ross

Enclosure



12201 Sunrise Valley Drive • Reston, Virginia 20192

June 2, 2017

Mark Goldstein, Director  
Physical Infrastructure  
U.S. Government Accountability Office  
441 G Street, NW  
Washington DC 20548

Dear Mr. Goldstein:

Thank you for providing the First Responder Network Authority (FirstNet) with the opportunity to comment on the U.S. Government Accountability Office (GAO) report regarding progress in establishing the Public Safety Broadband Network, stakeholder concerns and workforce planning. (GAO-17-569).

FirstNet is pleased that the report recognizes the significant actions that FirstNet has taken to ensure the establishment of a nationwide public safety broadband network (“NPSBN”) which will assist first responders in their mission -- to save lives and protect U.S. communities. Some of the efforts highlighted in the report and other activities include that FirstNet:

- Engaged in hundreds of conferences and meetings, conference calls and webinars as well as corresponded via phone calls, emails and newsletters as a means of outreach and consultation with our stakeholders, including tribal nations.
- Answered over 400 questions related to the Request For Proposal (RFP) and hosted a pre-proposal conference and public webinar with 437 attendees to discuss the RFP.
- Released an RFP for the NPSBN in January 2016 that was responsive to the needs of our stakeholders.
- Conducted a thorough and thoughtful examination of the offers we received on May 31, 2016 and began the evaluation period in June, which concluded in September 2016.
- Moved quickly to award the NPSBN contract to AT&T on March 30, 2017, less than two weeks following the Court of Federal Claims’ final ruling on March 17th in favor of FirstNet following a five month protest period.

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**Appendix II: Comments from the First Responder Network Authority**

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- Developed a framework for financing the network that will ensure that FirstNet and the NPSBN remain financially self-sufficient, including through the availability of funds to reinvest in the network, as technology evolves, to better serve public safety over the life of the 25-year contract.”
- Addressed, proactively, key challenges it faces to help ensure network reliability, security, and interoperability.
- Established effective contract oversight mechanisms including the creation of FirstNet’s Network Program Office (NPO) which currently has 26 full-time employees who will manage all aspects of the network contract.
- Developed a Contract Administration Plan and other internal policies and procedures to assist with managing the contract activities and AT&T’s performance to ensure network results are delivered according to public safety needs.

To more fully address stakeholders’ concerns the report recommends that FirstNet “request that the PSAC’s tribal working group fully explore tribal concerns and propose actions, as needed to address those concerns.”

FirstNet agrees with this recommendation and will work through the PSAC’s Tribal Working Group to fully explore tribal concerns and address those concerns. FirstNet is consistently looking for ways to build strong relationships with the tribes. As the report notes, FirstNet has:

- Identified a tribal liaison among the Board membership.
- Established a Tribal Working Group within the Public Safety Advisory Committee.
- Hired tribal outreach liaisons.
- Consulted with the tribes through State Single Points of Contact (SPOC) appointed by the governor of each state and territory, as required by the Middle Class Tax Relief and Job Creation Act of 2012 (Act).
- Solicited and received input from tribes through the use of FirstNet’s consultation processes, including public notices and draft RFP documents.

FirstNet’s efforts to support and engage with the tribes will continue and FirstNet will develop and adopt an organization-wide tribal consultation policy that embraces the government-to-government relationship underpinning Section 106 of National Historic Preservation Act.

To help ensure FirstNet’s resources reflect expected changes, the report also recommends that FirstNet “assess the long-term staffing needs in the Network Program Office prior to requesting to assume full responsibility for administering the contract from Interior.”

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**Appendix II: Comments from the First  
Responder Network Authority**

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FirstNet agrees with this recommendation and will assess the long-term staffing needs in the Network Program Office prior to requesting to assume full responsibility for administering the network contract from Interior. FirstNet has already undertaken efforts in this regard. In March 2017, FirstNet's NPO completed an initial Workforce Analysis Plan for FY 2017-FY 2018. Building on the initial analysis, NPO has begun conducting a comprehensive, strategic assessment of its workforce beyond FY 2018 in an effort to complete and implement a long-term staffing plan. With the recent award of the contract to AT&T, FirstNet has also begun the process of evaluating its long term staffing needs, and will incorporate necessary updates and changes as it executes on the long-term staffing plan.

Thank you again for the opportunity to comment and provide further information with respect to the report. If you have any questions regarding our comments to the report, please do not hesitate to contact me.

Sincerely,



Mike Poth  
Chief Executive Officer  
First Responder Network Authority

CC:

Ellen Herbst, Acting Deputy Secretary and Chief Financial Officer and Assistant Secretary for Administration, U.S. Department of Commerce

Len Bechtel, NTIA Director of Administration and Chief Financial Officer and Acting Assistant Secretary performing the non-exclusive duties of the Assistant Secretary for Communications and Information

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## Appendix III: GAO Contact and Staff Acknowledgments

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### GAO Contact

Mark L. Goldstein, (202) 512-2834 or [goldsteinm@gao.gov](mailto:goldsteinm@gao.gov)

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### Staff Acknowledgments

In addition to the individual named above, Sally Moino (Assistant Director); Nalylee Padilla (Analyst in Charge); Melissa Bodeau; Camilo Flores; Malika Rice; Andrew Stavisky; Michael Sweet; James Sweetman, Jr.; Hai Tran; and William Woods made key contributions to this report.

# Appendix IV: Accessible Data

## Data Tables

**Data Table for Figure 2: Selected Milestones for Deploying the Public-Safety Broadband Network Post Contract Award, per the January 2016 RFP**

	0-6 months (Phase 1)	0-12 months (Phase 2)	12-24 months (Phase 3)	24-36 months (Phase 4)	36-48 months (Phase 5)	48-60 months (Phase 6)
<b>Network Coverage:</b> Contractor deploys coverage solutions in states with a FirstNet radio access network (RAN) plan.	Initial coverage via existing wireless services	20%	60%	80%	95%	100%
<b>Public Safety Users on the Network:</b> Contractor acquires up to 14.6 million estimated eligible public safety users.	No goal specified	No goal specified	50%	No goal specified	100%	No goal specified

## Agency Comment Letter

Text of Appendix II: Comments from the First Responder Network Authority

Page 1

June 2, 2017

Mr. Mark Goldstein

Director, Physical Infrastructure

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

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I have enclosed FirstNet's comments on the draft report. FirstNet will continue to explore tribal stakeholders' concerns and assess the long-term staffing needs in the Network Program Office prior to requesting to assume full responsibility for administering the network contract from Interior.

If you have any questions, please contact Uzoma Onyeije at (571) 665-6142.

Sincerely,

Wilbur Ross

Enclosure

Page 2

June 2, 2017

Mark Goldstein, Director Physical Infrastructure

U.S. Government Accountability Office 441 G Street, NW

Washington DC 20548 Dear Mr. Goldstein:

Thank you for providing the First Responder Network Authority (FirstNet) with the opportunity to comment on the U.S. Government Accountability Office (GAO) report regarding progress in establishing the Public Safety Broadband Network, stakeholder concerns and workforce planning. (GAO-17-569).

FirstNet is pleased that the report recognizes the significant actions that FirstNet has taken to ensure the establishment of a nationwide public safety broadband network (“NPSBN”) which will assist first responders in their mission -- to save lives and protect U.S. communities. Some of the efforts highlighted in the report and other activities include that FirstNet:

- Engaged in hundreds of conferences and meetings, conference calls and webinars as well as corresponded via phone calls, emails and newsletters as a means of outreach and consultation with our stakeholders, including tribal nations.
- Answered over 400 questions related to the Request For Proposal (RFP) and hosted a pre- proposal conference and public webinar with 437 attendees to discuss the RFP.
- Released an RFP for the NPSBN in January 2016 that was responsive to the needs of our stakeholders.
- Conducted a thorough and thoughtful examination of the offers we received on May 31, 2016 and began the evaluation period in June, which concluded in September 2016.
- Moved quickly to award the NPSBN contract to AT&T on March 30, 2017, less than two weeks following the Court of Federal Claims’ final ruling on March 17th in favor of FirstNet following a five month protest period.

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- Developed a framework for financing the network that will ensure that FirstNet and the NPSBN remain financially self-sufficient, including through the availability of funds to reinvest in the network, as technology evolves, to better serve public safety over the life of the 25-year contract.”
- Addressed, proactively, key challenges it faces to help ensure network reliability, security, and interoperability.
- Established effective contract oversight mechanisms including the creation of FirstNet’s Network Program Office (NPO) which currently

has 26 full-time employees who will manage all aspects of the network contract.

- Developed a Contract Administration Plan and other internal policies and procedures to assist with managing the contract activities and AT&T's performance to ensure network results are delivered according to public safety needs.

To more fully address stakeholders' concerns the report recommends that FirstNet "request that the PSAC's tribal working group fully explore tribal concerns and propose actions, as needed to address those concerns."

FirstNet agrees with this recommendation and will work through the PSAC's Tribal Working Group to fully explore tribal concerns and address those concerns. FirstNet is consistently looking for ways to build strong relationships with the tribes. As the report notes, FirstNet has:

- Identified a tribal liaison among the Board membership.
- Established a Tribal Working Group within the Public Safety Advisory Committee.
- Hired tribal outreach liaisons.
- Consulted with the tribes through State Single Points of Contact (SPOC) appointed by the governor of each state and territory, as required by the Middle Class Tax Relief and Job Creation Act of 2012 (Act).
- Solicited and received input from tribes through the use of FirstNet's consultation processes, including public notices and draft RFP documents.

FirstNet's efforts to support and engage with the tribes will continue and FirstNet will develop and adopt an organization-wide tribal consultation policy that embraces the government-to- government relationship underpinning Section 106 of National Historic Preservation Act.

To help ensure FirstNet's resources reflect expected changes, the report also recommends that FirstNet "assess the long-term staffing needs in the Network Program Office prior to requesting to assume full responsibility for administering the contract from Interior."

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FirstNet agrees with this recommendation and will assess the long-term staffing needs in the Network Program Office prior to requesting to

assume full responsibility for administering the network contract from Interior. FirstNet has already undertaken efforts in this regard. In March 2017, FirstNet's NPO completed an initial Workforce Analysis Plan for FY 2017-FY 2018.

Building on the initial analysis, NPO has begun conducting a comprehensive, strategic assessment of its workforce beyond FY 2018 in an effort to complete and implement a long-term staffing plan. With the recent award of the contract to AT&T, FirstNet has also begun the process of evaluating its long term staffing needs, and will incorporate necessary updates and changes as it executes on the long-term staffing plan.

Thank you again for the opportunity to comment and provide further information with respect to the report. If you have any questions regarding our comments to the report, please do not hesitate to contact me.

Sincerely,

Mike Poth

Chief Executive Officer

First Responder Network Authority CC:

Ellen Herbst, Acting Deputy Secretary and Chief Financial Officer and Assistant Secretary for Administration, U.S. Department of Commerce

Len Bechtel, NTIA Director of Administration and Chief Financial Officer and Acting Assistant Secretary performing the non-exclusive duties of the Assistant Secretary for Communications and Information

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