



What Should States Look for in Responses to Public Safety Network RFPs

Best Practices for Evaluating State Public Safety Proposals

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EXECUTIVE SUMMARY

Over the next 6-8 weeks, the governors of all 50 States and Territories will have a critical decision to make – what public safety, interoperable network solution will be deployed in their State and operated for the next 25 years? Wireless 20/20 has conducted this analysis and developed this White Paper in order to address this vital decision. In a prior [White Paper](#), Wireless 20/20 recommended that States conduct RFPs over the next 6-8 months (by June 28, 2018), when a final decision has to be made. In that white paper, we advised:

By issuing an RFP, States are able to define their needs, make their demands known and review competitive bids. Any State that does not explore its options regarding FirstNet is doing a great disservice to its constituents and First Responders. Only by issuing an RFP, can States ‘take control of their own destiny’ in getting the coverage, capacity, service quality, low cost and revenue sharing potential made possible by FirstNet. States should not be rushed to accept the initial proposals made by FirstNet to serve their public-safety needs for the next 25 years.

This White Paper is designed to help governors and other State public-safety officials to review proposals received in response to their RFPs and make ‘opt-in/opt-out’ decisions. Within 180 days of the governor’s decision to pursue the “opt-out” alternative, States must complete the procurement process of selecting a vendor to build the alternative Radio Access Network (RAN). Within another 60 days, States must submit an alternative RAN plan to the FCC, which will evaluate whether the initial plan would be interoperable with the FirstNet nationwide system. The FCC has established a 90-day shot clock for completing its interoperability evaluation. If a State does not complete an opt-out decision during the 180 days following 12/28/17, then it may/must opt back in to the FirstNet/AT&T proposal final plan. It is important to note that this delayed, opt-in carries no penalties whatsoever.

Wireless 20/20 reviewed several FirstNet RFPs and conducted interviews to identify best practices for evaluating State Public-Safety proposals. In this white paper, Wireless 20/20 provides 12 key factors and criteria that a State should evaluate as part of the RFP process and while making their decision. In **Exhibit 1**, we provide our view on whether the FirstNet/AT&T proposal adequately addresses these factors. In the remainder of the paper, Wireless 20/20 analyzes and evaluate each of these factors and criteria. We identify the State’s needs and what a State should expect with respect to each factor. Based on the information that has been made available publicly, Wireless 20/20 believes the current FirstNet/AT&T proposal does not adequately address what most States need or should expect for its public-safety first responder network, nor does it seem to adequately value and compensate the State for access to this valuable spectrum, National Telecommunications and Information Administration (NTIA) grant money, or the opportunity to serve First Responders with an interoperable national network.

As Wireless 20/20 was completing this white paper, we have come across information and activities related to the FirstNet Spectrum Manager Lease Agreement (SMLA) marked “confidential draft” and distributed to certain States. These SMLAs reportedly include proposed termination payments in the millions of dollars — and billions in at least two instances for some States, along with language prohibiting separate core networks, adoption targets and interoperability requirements. Wireless 20/20 believes States should not allow these threats associated with contract penalties to detract or dissuade them from continuing to conduct an evaluation of their FirstNet alternatives.

Wireless 20/20 reviewed several FirstNet RFPs and conducted interviews to identify best practices for evaluating State Public Safety proposals.

Wireless 20/20 believes the current FirstNet/ AT&T proposal does not adequately address what most states need or should expect from its public safety first responder network.

Exhibit 1
 FirstNet Scorecard – Wireless 20/20
 Comparative Analysis Framework

	Relative Value	AT&T FirstNet	Alternate Provider 1	Alternate Provider 2
1. Public Safety Network Coverage Using Band 14	9%	Inadequate		
2. Interim Network Coverage	8%	Satisfactory		
3. Public Safety Network Capacity	8%	Insufficient info		
4. Network Reliability, Security & Resilience	8%	Insufficient info		
5. Network Evolution and Traffic Growth	8%	Insufficient info		
6. Quality of Service, Priority, and Pre-emption	8%	Inadequate		
7. Use of Local Partners	8%	Insufficient info		
8. Cost of Service to First Responders	9%	Inadequate		
9. Financial Viability of the Provider/Model	9%	Satisfactory		
10. Cost of Building and Operating Network	8%	Satisfactory		
11. Financial Benefits to the State, Job Creation	8%	Inadequate		
12. Accountability and Privity of Contract with Network Provider	9%	Inadequate		
TOTAL SCORE	100%			

Source: Wireless 20/20, October 2017.

States and territories “opting-out” will apply for their share of the available \$5.5 billion in NTIA SLIGP 2.0 funding, with each receiving a “pro-rata” share of the funding.

STATUS UPDATE OF FIRSTNET RFPs AND DECISION-MAKING

FirstNet updated its secure portal by posting the official updated State plans for all 50 States and three Territories on September 19, 2017. These updated State plans covering network design, technology and pricing are considered confidential and are available only to State Single Points of Contact (SPoC) and their designees. FirstNet recently delivered initial State plans outlining public-safety Long Term Evolution (LTE) deployment plans to governors in the U.S. territories of Guam, American Samoa and the Northern Mariana Islands, although timetables have yet to be established for those governors to make their “opt-in/opt-out” decisions.

The FCC has issued the guidelines it will use in a two-pronged review system to evaluate network proposals for States that plan to opt out of FirstNet and build their own networks. The FCC will limit its review process solely to the interoperability of any State-built portions of the RAN with the AT&T-built FirstNet network. The success of FirstNet will depend on there being true interoperable State RANs across the country. The Commission has yet to rule on whether States that choose to opt out must use FirstNet’s core network. As directed by the Act, the FCC will not examine possible RAN interconnection with non-FirstNet networks or cores, and will not reject an otherwise qualified alternative plan that includes a proposed State core. The FCC announced that this issue is outside the scope of its statutory review responsibility and has declined to consider it further. If approved by the FCC, States must also secure compatibility approval from the NTIA and negotiate a spectrum-lease agreement with FirstNet.

All States and Territories will be eligible for State and Local Implementation Grant Program (SLIGP) 2.0 funding, and those that “opt-out” will apply for their “pro-rata” share of the available \$5.5 billion. The official release of the NTIA construction-grant Funding Level Determination (FLD) for each State and Territory was delayed until September 29. This delayed the start of the statutory 90-day period, and governors now have until December 28, 2017 to make their “opt-in/opt-out” decisions. This makes the last week of the year potentially a busy one for FirstNet decision makers, and sets up 2018 as a big year for the public-private partnership in terms of network build-out.

The NTIA FLD developed for each State indicates the amount of construction grant funding a State or Territory could receive if it opts out of the national network. States that opt out can apply these funds to deploy and maintain their alternate public-safety networks, and for States that opt-in AT&T will receive their share of the grant money. A chart with these FLDs is provided in **Appendix 1** of this white paper. The FLDs are based on population in a tiered system where the most-populous States such as Texas and California may be eligible for \$300-400 million, whereas smaller States such as Vermont or Wyoming may receive only \$30-40 million. NTIA officials report that the grant funding will cover only the construction portion of RAN build-out in a given State, and may not be sufficient to cover the total cost to construct, operate, maintain and improve the FirstNet RAN within a State or Territory over a period of 25 years.

Officials from Colorado and Washington, which are deciding whether to opt out, have reported they believe the FLDs didn’t properly account for federal land such as national parks. NTIA has based these funding amounts on a technical model by the National Institute of Standards and Technology (NIST). NIST used population definitions in its study to differentiate propagation analysis and determine coverage requirements. The NIST model termed areas with less than 5 people per square mile as “rural low average population density”, a classification that “essentially eliminates federal land”. Colorado SPoC Brian Shepherd believes coverage in federal lands is critical, since it has “little to no population but tremendous recreational usage”. Public-safety officials often must enter federal land to save hikers and others who run into trouble in the mountains. Shepherd believes that neither NTIA or NIST included coverage on federal lands, leading to NTIA assigning proportionately less money to States with more federal land.

Exhibit 2 provides an update of State-level FirstNet actions since September 1. The chart and associated map indicate that 18 States have issued an RFP and 6 have issued RFIs. Meanwhile 27 States and Territories have issued an LOI to opt-in to FirstNet plans as of October 20. This includes Nebraska, Maryland, Texas, Idaho and Louisiana that announced plans to opt-in during September as well as Alabama and Indiana that announced opt-in plans in October. Texas is the largest State to announce an opt-in decision, and is home to the 40-site Harris County LTE network; the first public-safety LTE network in the US and the largest “early-builder” public-safety LTE network deployed using local taxpayer dollars. It is yet unclear whether AT&T would assume control of the Harris County LTE network. It is also not clear why these States would decide to opt-in before issuing an RFP and carefully evaluating alternative plans. These LOIs are reported as being “non-binding” letters of intent and not formal opt-ins. There is no record of any formal opt-ins at

It is not clear whether other states have received similar threats of proposed fees and penalties that may be imposed by FirstNet if an opt-out were to fail.

the FCC, and we believe that any of the States that have issued LOIs to opt-in are still free to opt-out in December and continue their evaluation of their alternatives.

Exhibit 3 provides an update on the active procurements and RFPs for alternative FirstNet RANs. With the release of the RFP on September 22, Georgia became the 15th State to issue an RFP seeking alternative RAN bids for FirstNet. Connecticut became the 17th State to issue an RFP initiating procurement for an alternative-RAN vendor when it issued an RFP on October 6, with RAN proposals due November 9. The States of Washington and Oregon recently issued a joint RFP to operate a high-speed, wireless broadband data network dedicated to public safety. These two States released their RFP on October 13 and plan to close the response period on November 13. By issuing an RFP to solicit bids from other vendors, these States are empowered to conduct effective due diligence that ensures the best service for First Responders in the Northwest. Once proposals have been submitted, the States will weigh them against the merits of joining FirstNet/AT&T.

On October 16, New Hampshire Governor, Chris Sununu issued an Executive Order establishing the FirstNet Opt-Out Review Committee to review “the regulatory and financial risks” associated with an opt-out plan and Rivada’s financial capacity to achieve the successful provision and implementation of the State’s Public Safety Broadband Network (PSBN). In a press release, the Governor stated this committee is a direct result of the recommendation from the State Interoperability Executive Committee (SIEC) that “an opt-out of FirstNet is far and away our best option”. Governor Sununu also stated, “As part of this review, we will seek clarification of certain proposed fees, as well as clarification of penalties that may be imposed by FirstNet if an opt-out were to fail.” Sununu went on to say those potential FirstNet-imposed fees “appeared to be arbitrary and primarily designed to deter States from opting-out of FirstNet plans”.

This news comes as Vermont prepares to decide whether to opt-out of the FirstNet/AT&T plan. The Vermont Public Safety Broadband Commission is due to make a recommendation to Governor Phil Scott by November whether to opt into the FirstNet/AT&T plan. A recent document on FirstNet letterhead indicates that a State wishing to opt-out would have to put its “full faith and credit” in order to contract with an alternate operator that could meet the exacting standards set by the national FirstNet program. This memo states that failure to carry out this alternate program could result in penalties against the State of up to \$173 million.

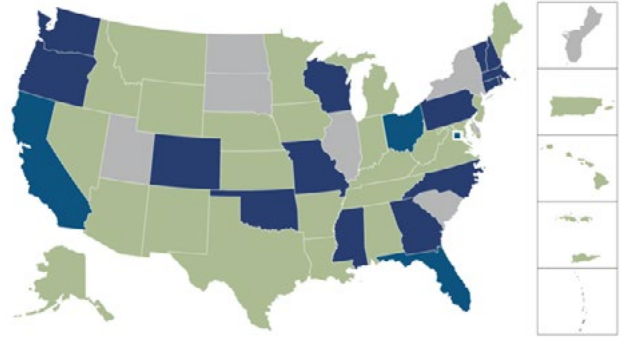
It is not clear whether other States have received similar threats of proposed fees and penalties that may be imposed by FirstNet if an opt-out were to fail. Many other questions remain for the 31 States and Territories still mulling the decision whether to opt-out of having AT&T deploy RANs in their States. Governors have more to consider than simply whether they like the deployment plans presented by FirstNet and AT&T. They need to base their decisions on a careful evaluation of the proposed AT&T/FirstNet plan versus alternative plans submitted in response to their RFPs, based on a clearly articulated set of priorities and evaluation criteria.

Exhibit 2
 Status of States and Territories
 Considering FirstNet Draft
 Plans (October 2017)

State RFP / RFI Tracker

8 RFI
18 RFP

RFI Issued
 RFP Issued
 Letter of Intent



	Issued LOI to Opt-in	Opt-out - Issued RFP	Issued RFI	Undecided
1	Virginia	New Hampshire	California	New York
2	Wyoming	Colorado	Florida	Delaware
3	Arkansas	Wisconsin	Georgia	South Carolina
4	Kentucky	Massachusetts	Kansas	Illinois
5	Iowa	Rhode Island	Ohio	Utah
6	New Jersey	Vermont	Washington, DC	South Dakota
7	West Virginia	Pennsylvania		North Dakota
8	New Mexico	Oklahoma		Guam
9	Maine	Missouri		American Samoa
10	Montana	North Carolina		Northern Marina Islands
11	Kansas	Mississippi		
12	Nevada	Georgia		
13	Tennessee	Connecticut		
14	Nebraska	Washington		
15	Hawaii	Oregon		
16	Arizona	Arizona		
17	Michigan	Michigan		
18	Alaska			
19	Maryland		Maryland	
20	Idaho		Idaho	
21	Louisiana			
22	Texas			
23	Minnesota			
24	Alabama	Alabama		
25	Indiana			
26	Puerto Rico			
27	U.S Virgin Islands			

Source: Wireless 20/20, October 2017.

States issuing an RFP will have all the information they need to make an informed final opt-in or opt-out decision on FirstNet implementation.

Exhibit 3
Updated Status of FirstNet
RFPs Issued by the States

	States Issuing RFPs	Date Issued	Response Due	URL/Special Provisions/Requirements
1	New Hampshire	12/11/15	2/19/16	Awarded to Rivada Networks as highest-scoring bidder among five proposals. On October 16, Governor Sununu issued Executive Order to establish the FirstNet Opt-Out Review Committee to implement the recommendation to opt out of the FirstNet/AT&T plan.
2	Michigan	3/22/17	4/19/17	Issued LOI to opt-in to FirstNet draft plan after issuing RFP
3	Arizona	9/28/17	3/30/17	Second State to Issue LOI to opt-in to FirstNet draft plan after RFP
4	Alabama	9/20/16	1/31/17	Third State to announce Opt-in plans after issuing an RFP
5	Colorado	P1 3/24/17 P2 7/24/17	9/14/17	Two-phase process. Phase 1 Rivada and Macquarie Capital short listed. Phase 2 process underway
6	Wisconsin	5/19/17	7/11/17	Seeking an alternative solution to the nationwide FirstNet Offering
7	Massachusetts	P1 5/25/17 P2 8/10/17	9/15/17	Two-phase process. Phase 2 requests detailed financial and technical plans
8	Rhode Island	6/13/17	7/31/17	Rivada Networks, Verizon and the Macquarie Group are competing
9	Pennsylvania	7/10/17	9/7/2017	Joint Public Hearing to review FirstNet in PA on October 19
10	Oklahoma	7/18/17	8/16/17	Seeking an alternative solution to the nationwide FirstNet Offering
11	Missouri	7/21/17	8/21/17	Seeking an alternative solution to the nationwide FirstNet Offering
12	North Carolina	8/9/17	8/31/17	Network plan providing the coverage, capacity, connectivity and QoS with financial model that demonstrates the sustainability of the NC PSBN through the monetization of excess Band 14 capacity
13	Vermont	8/30/17	9/29/17	Vermont Public Safety Broadband Commission is evaluating the FirstNet plan to negotiate for improvements and reviewing proposals before making a recommendation on whether to opt-out
14	Mississippi	8/23/17	10/03/17	Seeking an alternative solution to the nationwide FirstNet Offering
15	Georgia	9/22/17	10/24/17	Georgia's alternative RAN would cover "greater than 98% of the State's geography and 99.5% of its population Hardening of the network to public-safety grade using 20 MHz of 700 MHz Band 14 spectrum
16	Connecticut	10/6/17	11/9/17	Seeking an alternative solution to the nationwide FirstNet Offering
17/ 18	Washington/ Oregon	10/16/17	11/17/17	Joint RFP to operate a high-speed, wireless broadband data network dedicated to public safety

Source: Wireless 20/20, October 2017.

Wireless 20/20 devised a "scorecard" of criteria for evaluating alternate proposals versus AT&T/FirstNet plans

FIRSTNET SCORECARD – WIRELESS 20/20 COMPARATIVE ANALYSIS FRAMEWORK

Wireless 20/20 has reviewed these RFPs and conducted interviews with several State SPoCs to devise a “scorecard” of criteria for evaluating alternate proposals versus AT&T/FirstNet plans. These criteria include Band 14 network coverage, public-safety network capacity, priority and pre-emption, service quality and QoS, network quality and resilience, use of local partners, cost of service, financial considerations, new jobs created, and the ability to address risk factors and technology evolution during the next 25 years. This scorecard, presented in **Exhibit 4**, is designed to be customized for each State FirstNet RFP. The following sections provide our assessment of this Comparative Analysis Framework based on a review of State FirstNet RFPs and publicly available information on AT&T/FirstNet plans for each State.

Exhibit 4

FirstNet Scorecard – Wireless 20/20
Comparative Analysis Framework

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Source: Wireless 20/20, October 2017.

States should be most concerned with the design, deployment and build-out schedules for their true purpose-built Band 14 network.

States should carefully review and evaluate the detailed coverage and updated build-out information for Band Class 14 provided in plans recently posted on each state portal, and assess whether there are large gaps in LTE connectivity in rural and remote areas.

PUBLIC SAFETY NETWORK COVERAGE AND CAPACITY

Wireless 20/20 believes that the current FirstNet/AT&T proposal does not adequately address what most States need for its public-safety first-responder network coverage. Network coverage and cell-site tower placement are two of the most important priorities for First Responders and agency heads. In planning a state-wide PSBN, there are significant trade-offs between short-term access to an existing LTE network, and long-term geographic coverage and capacity of a true purpose-built Band 14 network. In the near-term, FirstNet is offering immediate access to the legacy AT&T multi-band 4G LTE network based on existing coverage in each State. The FirstNet/AT&T solution does not offer a network specifically built for First Responders, and instead provides a rate plan on AT&T's commercial LTE network.

AT&T has made commitments to expand its network coverage in unserved areas of some States, especially those that have negotiated enhanced coverage commitments in States where AT&T has network and/or spectrum deficiencies or in return for early opt-in commitments. Alternate network providers have arranged for the use of existing wireless networks on an interim basis through MVNO agreements with operators such as Sprint until the dedicated Band 14 PSBN is available. State-wide coverage of the dedicated Band 14 network is a top priority, especially coverage in the more remote and rural parts of any State.

States should be most concerned with the design, deployment and build-out schedules for their true purpose-built Band 14 network, specifically how much of the dedicated Band 14 network will be built and how timely is this deployment. Spectrum is a scarce and valuable resource and States should not give away control of vital Band 14 dedicated public-safety spectrum. Our discussions with State FirstNet SPOCs indicates that an accelerated network build and state-wide coverage of the dedicated Band 14 network should be a top priority – especially in rural and remote areas, and parts of any given State where existing AT&T network coverage is sparse.

At a minimum, States should have an opportunity to carefully evaluate the build-out plan for the Band 14 spectrum that has been allocated for this purpose. AT&T is obligated to build out the Band 14 spectrum on a “significant portion” of its FirstNet nationwide LTE network. During a recent Senate subcommittee hearing, AT&T testified that it will deploy infrastructure on the 20 MHz of 700 MHz Band 14 spectrum licensed to FirstNet only in geographic locations where it needs additional bandwidth capacity. States should carefully review and evaluate the detailed coverage and updated build-out information for Band 14 provided in plans recently posted on each State portal, and assess whether there are large gaps in LTE connectivity in rural and remote areas. AT&T's first responder network will provide coverage for only 76.2 percent of the continental US, with several tiers of coverage availability. These tiers range from 2G coverage up to “LTE with priority”; meaning public-safety traffic will be allowed wireless access privileges over commercial users when using AT&T towers. States should seek additional information from AT&T on the true meaning of “LTE with priority”, how it works and how to measure it.

Recent hurricanes have demonstrated how vulnerable wireless infrastructure can be to weather and disaster-related outages, and this significantly impacts communication for First Responders. Here, we place a high value on the resilience of the network. Battery backup for only 24 hours may be considered adequate for commercial grade wireless networks. Public-safety-grade wireless networks require a minimum of 7 days or up to 30 days with generators at each tower to make them more resilient. If public-safety wireless networks are augmented with solar power, then they can operate for even longer periods of time during power outages. Recent attacks and breaches have also raised questions regarding the need for public-safety-grade levels of wireless network security to protect First Responders and essential systems.

There is still some debate regarding the specific definition for what constitutes a ‘public-safety grade’ network. However, reliability, resiliency, low latency, security (both physical and cyber security) and user-support services are some of the important considerations in evaluating proposals for a state-wide PSBN. Although, hardening and resiliency of the PSBN to public-safety-grade is a primary requirement, FirstNet's commercial partner, AT&T, has stated that it is not aware of a single agreed-upon definition for “public-safety-grade”. States should evaluate AT&T's plans and alternatives based on the formal public-safety-grade standard definition published jointly by the NPSTC and 16 public-safety-related associations in a report defining public-safety-grade broadband systems and facilities.

Given the 25-year period of the nationwide FirstNet contract, States should be concerned with the capacity of their PSBN to handle traffic growth over such a long period. Based on wireless broadband traffic forecasts from Ericsson and Cisco, additional spectrum or more efficient technologies may be required to address the long-term requirements

QoS, Priority and Pre-emption should be controlled locally by the states and their designated public-safety officials.

of public safety and First Responders, especially in light of anticipated increased uses of real-time video surveillance and body-cams. States should consider the wireless network capacity and density needed in a given area, especially in high traffic zones measured by Mbps/Sq. Km. Are alternate operators proposing the use of 3-, 4- or 6-sector antenna sites? States should also evaluate the technical scalability of their PSBN, to evaluate plans for migration from 4G LTE to LTE advanced, as well as 5G technologies such as 4x4 MIMO, 8x8 MIMO or Massive MIMO technology in the State PSBN deployment over the next 25 years.

QUALITY OF SERVICE, PRIORITY, AND PRE-EMPTION

FirstNet was established to ensure the deployment and operation of the state-wide PSBNs using 20 MHz of LTE spectrum in the 700 MHz band. Less than 20% of First Responders in most States currently use AT&T and 70-75% subscribe to an alternative network, mostly that of Verizon Wireless. Once built, the PSBNs will act as a “wide-open freeway” providing public-safety users with the bandwidth and capacity they need to communicate and share information during both emergencies and daily operations.

FirstNet has developed priority and pre-emption capabilities so public-safety voice, video, and data communications won't get caught in any “traffic jams” caused by network congestion. FirstNet refers to Quality of Service, Priority and Pre-emption (QPP) as critical aspects of the state-wide PSBN plans. QPP is how FirstNet plans to make the network mission critical for public-safety users.

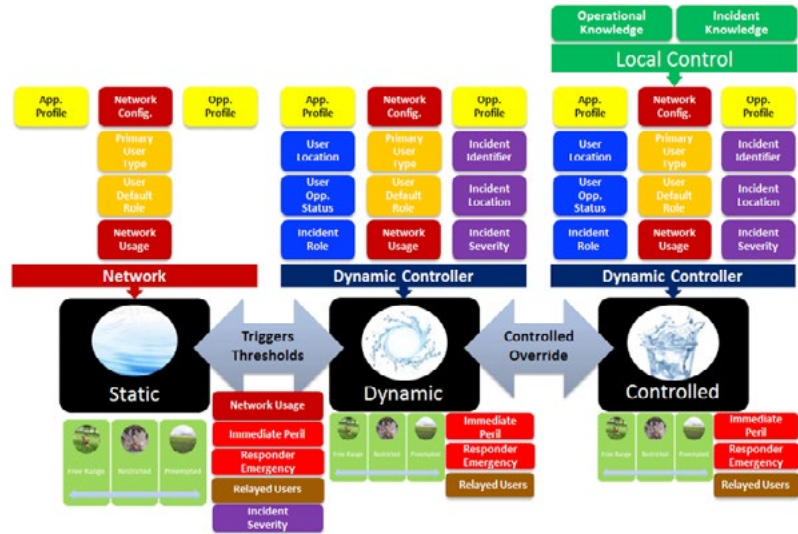
- **Quality of Service (QoS)** is needed to ensure that public-safety users have access to their mission critical services and applications at the required level of quality and reliability. QoS manages the assignment of properties such as guaranteed bandwidth, usage limits, latency, accuracy, accessibility, and retention to make sure that public-safety communications over the data network are seamless.
- **Priority** is the means by which users, applications, or data streams take precedence over others during periods of congestion in the network. These tools help assure that public-safety communications take priority over non-public-safety communications, and that First Responders in peril take precedence over all others.
- **Pre-emption** is used together with priority to control the use of scarce resources by removing lower priority users from the network in times of severe network congestion. Pre-emption of users is anticipated to be used rarely and will serve as an important tool to assure that public-safety users can communicate in times of emergency.

Some of the States issuing RFPs have required that public-safety users of their PSBN must be given priority and pre-emption over the Band 14 spectrum or any offeror solution. **Exhibit 5** presents the FirstNet QPP framework which seeks to ensure that the National Public Safety Broadband Network (NPSBN) remains a “wide open freeway” for public safety. Furthermore, when public-safety traffic increases, the NPSBN should, as quickly and seamlessly as possible, move non-public-safety traffic onto other network roadways. The QPP framework has exploited features and settings that are standard in 3GPP technology, including incorporation of additional interfaces, systems and tools as needed, and provides a holistic solution requiring device, applications, operations, and policy elements.

Exhibit 5

FirstNet QPP Framework for Quality of Service, Priority and Pre-emption

Wireless 20/20 believes that the current FirstNet/AT&T proposal does not adequately address what most states need for QoS, Priority and Pre-emption (QPP) on the public safety first responder network.



Together, QPP aims to assure that public-safety users always have the wireless data resources they need, when they need it. The QPP framework must provide alignment with local control where Public Safety Entities (PSEs) influence network QPP behavior through the administration of their users, services, devices, and applications. Some States are seeking a local operations center with their contractor to ensure pre-emption and prioritization. Recognizing that local control may mean different things to different constituencies, Wireless 20/20 believes that QoS, pre-emption control and the priority of public safety over commercial traffic should be controlled locally by the States and their designated public-safety officials.

Wireless 20/20 believes that the current FirstNet/AT&T proposal does not adequately address what most States need for QPP on the public-safety First Responder network. AT&T should specifically be asked to clarify its QPP policy for pre-emption and especially the role of local control.

USE OF LOCAL PARTNERS

A key element of State FirstNet plans is the use of local partners in network deployment and implementation. Several State RFPs place an emphasis on the use of local resources to deploy and maintain their PSBN. These States will carefully compare the AT&T/FirstNet plan to alternatives submitted in response to their RFPs, looking for the use of qualified local partners in the public-safety network design, deployment, operations, maintenance, and customer support. Several RFPs are also seeking information on workforce utilization to ensure that experienced and qualified local employees and contractors will be utilized as maintenance providers for the RAN, and to provide standby power, backhaul and other key components of the state-wide PSBN. States are also concerned with local control of the network operations system employed to monitor their PSBNs.

Some States have also placed an emphasis on small diverse business participation, especially among the technology partners to be employed in the deployment, provisioning, and operation of the RAN. If a State elects to opt-out of the federal program, the PSBN must be designed to provide services to public-safety entities that will improve first responder safety and increase efficiency in the provision of those services. Alternate providers must support an applications ecosystem that supports the NPSBN with capabilities and services relevant to state-level public-safety agencies and service providers. Alternative plans must function as a dedicated neutral carrier with a core to core interconnection and interoperability to access FirstNet applications. However, many of these applications must be customized to meet the needs of local public-safety entities with specific geographic and operating parameters that are unique to each State.

Alternate providers have engaged several local partners to support their plans for specific States, including several

A key element of State FirstNet plans is the use of local partners in network deployment and implementation.

Public safety usage costs should be consistent with the objective for wide adoption.

Wireless 20/20 believes that financial sustainability of the public safety RAN at state level will rely on the effective monetization of excess capacity.

rural or regional wireless carriers. For example, Rivada Networks collaborated with Ericsson, Nokia, Intel Security, Harris Corporation, Fujitsu Network Communications and Black & Veatch to form Rivada Mercury for the FirstNet bid, and Rivada has submitted proposals in multiple States. Rivada and U.S. Cellular announced that they have submitted a public-safety network plan for the States of New Hampshire and Wisconsin, in which excess capacity would “be offered for commercial use to support wireless users throughout the State of New Hampshire (and Wisconsin), including U.S. Cellular customers”. Other regional rural or regional wireless carriers partnering in specific State proposals include C Spire, Vermont Telephone, Southern Linc and Shentel.

COST OF SERVICE TO FIRST RESPONDERS

States that have released FirstNet RFPs seek to have as many First Responders, as possible, be connected to their PSBNs, to promote widespread adoption and encourage interoperability. These States are seeking compelling, differentiated, and competitively priced service packages to ensure widespread adoption of FirstNet products and services by a majority of eligible PSEs within the first few years after award. We share the belief of these States that public-safety usage costs should be consistent with the objective for wide adoption.

Among the highest priorities in States that opt-out and select alternate operators is to secure the widest possible adoption of the RAN by public-safety users. These States also must ensure that the usage costs are consistent with the objective for the widest possible adoption. Alternate operators need to provide service to public-safety users at fees that “will be maintained at the lowest practical level”. States should carefully evaluate standard pricing proposals, incentives and promotional pricing offers proposed by alternate operators designed to promote high-adoption rates and low cost-of-service for First Responders, in the context of a financially viable business plan.

Wireless 20/20 believes that the cost of service under the AT&T/FirstNet plan may place a significant burden on local organizations seeking access to the national public safety and related applications. States have the responsibility to negotiate service pricing on behalf of local public-safety agencies. We estimate that billions of dollars can be saved by first responder organizations if service prices are discounted by alternate operators. This is part of the benefit a State can derive for benefit of its local organizations. Many local public-safety agencies struggle to afford the cost of these services, and discounts could be very beneficial. States should also evaluate the sales, distribution, and marketing capabilities for PSBN services that will drive widest possible adoption of the RAN by public-safety users. At a minimum, States should evaluate the sales and marketing teams that will be assigned by RFP respondents to their PSBN.

FINANCIAL VIABILITY OF THE PROVIDER/MODEL

States that opt-out of FirstNet must eliminate concerns regarding the financial viability of the provider/model as it would impact the sustainability of their public-safety RAN. In general, AT&T/FirstNet plans submitted to each State rely heavily on the use of the \$5.5 billion in NTIA construction-grant funding to ensure the financial viability and sustainability of the national public-safety RAN. It is not clear that these plans address the risk that the pending \$85-billion acquisition of Time Warner would significantly increase AT&T’s long-term debt. However, most Wall Street analysts believe the returns AT&T would receive through the acquisition of Time Warner may be much higher than the cost of its recently raised \$22.5 billion of debt.

None of the States opting-out of the AT&T/FirstNet plan has appropriated funds to enter into an agreement with an alternate RAN operator. As such, each PSBN will need to be financially self-sustaining for the anticipated lifespan of the network. Alternate operators are required to develop a self-sustaining business model leveraging the licensed 20 MHz of Band 14 spectrum within the State to build, deploy, operate, and maintain the PSBN. This is one of the most critical evaluation criteria in the scorecard. The NTIA construction-grants listed in Appendix 1 identify the funding level allocated for each State and Territory, and define how much each State will receive in grant funds. FirstNet also defines how much each State will have to pay in an “opt-out” scenario for use of its LTE core and Band 14 licensed spectrum.

Our assessment of financial sustainability focuses on the revenue side of the equation, since all vendors are providing assurances that States would not be responsible for building, operating and maintaining the network. These assurances come in the form of performance bonds and contractual assurances that should make States comfortable with the cost side of the equation. Some alternate operators have offered to deploy a purpose-built, dedicated and

state-wide network for First Responders at no cost to the State. A key element of the financial consideration is the possibility of a "Revenue Sharing" model where the public-safety network operator would share a certain portion of the revenue generated by the public-safety network with the State. Since the public-safety network will not be fully utilized by First Responders, revenue sharing would allow the operator to use the network and the capacity provided by the FirstNet spectrum to provide services to commercial customers. This, in turn, will allow the operator to monetize these assets and share some of this revenue with the States.

States have not appropriated any funds for the alternative RAN, so vendors need to leverage excess network capacity from the RAN to make the system financially self-sustaining. Revenue sharing can come in different flavors. For instance, some alternate operators have chosen to provide revenue sharing in the form of financial returns that are used to enhance the FirstNet network. Some may choose to provide revenue back to the States. Others may choose to provide credits towards the usage by First Responders. For instance, one alternate operator has offered to provide free 2 GB per month to all First Responders as credit towards their monthly usage. Depending on the needs and desires of the States, the form of revenue sharing can be customized to meet the needs of the local First Responders and that of the States.

Wireless 20/20 believes that financial sustainability of the public-safety RAN at the State level will rely on the effective monetization of excess capacity. The foundation of the FirstNet business model relies on this concept of monetizing access capacity for the purpose of covering operating expenses and generating revenue for the FirstNet operator. Some alternate operators have chosen to put some of this revenue on the table to be shared with the States. AT&T has not. States should welcome any and all forms of revenue sharing by their public-safety RAN operator. The lack of revenue sharing should be considered a net negative factor on the scorecard.

FINANCIAL BENEFITS TO THE STATE - JOB CREATION

The States have been allocated a very valuable asset, 20 MHz of 700 MHz spectrum. In our prior white paper, we estimated the value of that spectrum in the range of \$8.3-\$17.6 billion. In addition to the spectrum, the State has the right to its allocated share of the \$6.5B of NTIA grant money. Furthermore, the States have valuable network assets, like towers, building rooftops, fiber and backhaul that can be made available to a network operator, for which the State may derive significant value. Finally, an endorsement as the State's public-safety network solution, interoperable with other State public-safety network solutions, will drive significant revenue opportunities for the network operator. Collectively, these commitments and these assets have significant value. It is important for a State to explore what type of value and consideration that it will derive from a network provider. That is part of the Public Private Partnership model that was envisioned for FirstNet.

Wireless 20/20 believes that a State should derive value from the public-safety network operator in many ways as consideration for the value and many commitments shared by the State with the network operator. First, a State should get the benefit of a quality, purpose-built public-safety network at no cost to the State. That is the initial proposition. The State should be able to secure low cost or discounted services for the State and/or its First Responders, as addressed in Section 5. In addition, the State could derive an annual license fee or a revenue share based on the commercial services offered from the capacity and the use of the spectrum. Also, the endorsement by the State of this network's public-safety service should result in increased customers and revenue for the operator that could be shared with the State. A State may also lease access to its State-owned towers, buildings, fiber, backhaul and other telecom infrastructure assets. The operator will need to acquire these assets from some source and the States could be the beneficiary of that revenue stream. Finally, a State should consider what incremental job creation is generated from this opportunity. Job creation is obviously extremely valuable to a State. Collectively, this can generate hundreds of millions of dollars of benefit to a State.

Based upon the information that we have, it appears that the FirstNet/AT&T proposition provides a State which opts-

Wireless 20/20 believes that a State should derive value from the public safety network operator in many ways in consideration for the value and many commitments shared by the State with the network operator.

in very little of the financial benefits described above. The States do appear to get a network at no-cost, however the quality and benefits of that network are uncertain. However, the State gets no annual payments or revenue share. There is no commitment on discounted cost of service. AT&T is using its existing network, so there is limited opportunity to benefit from revenue for the State's telecom infrastructure assets. Also, it would appear there would be limited incremental job growth, since it is merely an extension of AT&T's existing network/business. It appears that a State that opts-in to the current FirstNet/AT&T plan is leaving hundreds of millions of dollars of benefits to the State on the table. This leads us to conclude that the FirstNet/AT&T proposal is inadequate based on this criterion.

ACCOUNTABILITY AND PRIVACY OF CONTRACT WITH NETWORK PROVIDER

The public-safety broadband network is intended to be the State's solution for public safety. Like many other services in the State and with public safety, the issues and concerns are very local and very unique to a particular jurisdiction, city or county. As such, it is important that the State, acting as the fiduciary agent for local public safety, has the ability to hold the network operator accountable for meeting the needs of the local public-safety organizations. In order to do so, it is critical that the States have a direct relationship, both from a customer service perspective and contractual perspective, directly with the operator. The State must have privity of contract with the network provider and be able to hold the operator accountable for its needs.

It appears that in the FirstNet/AT&T proposal, the State's contract relationship is through FirstNet and not directly with AT&T. From a privity of contract perspective, if the State wants to enforce something or modify something over the 25-year-long agreement, it must work through someone in Washington at FirstNet. That is inadequate from an accountability perspective, whereby the State would want privity of contract with the network provider and have a customer service relationship directly and locally with the network provider. For these reasons, Wireless 20/20 believes the FirstNet/AT&T proposal is inadequate based on this criteria.

This White Paper was authored by Berge Ayvazian, Senior Analyst and Principal Consultant of Wireless 20/20.

Wireless 20/20 helps mobile operators and their vendors develop their Wireless Network strategies, service offerings, marketing plans, technology roadmaps and business cases. Wireless 20/20 also leverages its WiROI® Business Case Analysis Tools to assist clients in issuing RFPs and evaluating responses.

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Appendix 1

FirstNet QPP Framework for Quality of Service, Priority and Pre-emption

	State	Current Grant Amount Available	Maximum Grant Amount
1	Texas	\$ 360,981,840	\$ 451,227,299
2	California	\$ 331,874,026	\$ 414,842,533
3	Illinois	\$ 290,179,050	\$ 362,723,813
4	Florida	\$ 239,268,473	\$ 299,085,592
5	New York	\$ 171,275,319	\$ 214,094,148
6	Pennsylvania	\$ 148,798,243	\$ 185,997,803
7	Michigan	\$ 146,887,691	\$ 183,609,614
8	Georgia	\$ 143,178,974	\$ 178,973,717
9	North Carolina	\$ 128,344,104	\$ 160,430,129
10	Washington	\$ 127,107,864	\$ 158,884,831
11	Ohio	\$ 124,298,230	\$ 155,372,787
12	Indiana	\$ 108,789,048	\$ 135,986,309
13	Virginia	\$ 104,967,945	\$ 131,209,931
14	Louisiana	\$ 94,066,563	\$ 117,583,203
15	Missouri	\$ 92,268,397	\$ 115,335,496
16	New Jersey	\$ 90,807,387	\$ 113,509,233
17	Minnesota	\$ 87,997,752	\$ 109,997,190
18	Arizona	\$ 87,211,055	\$ 109,013,818
19	Alabama	\$ 84,064,264	\$ 105,080,330
20	Massachusetts	\$ 77,658,297	\$ 97,072,872
21	Arkansas	\$ 75,972,517	\$ 94,965,646
22	Wisconsin	\$ 72,376,185	\$ 90,470,231
23	Colorado	\$ 70,802,789	\$ 88,503,487
24	Oregon	\$ 69,791,321	\$ 87,239,151
25	Tennessee	\$ 69,791,321	\$ 87,239,151
26	Iowa	\$ 64,621,593	\$ 80,776,992
27	Kansas	\$ 56,642,231	\$ 70,802,789
28	Kentucky	\$ 56,417,461	\$ 70,521,826
29	Maryland	\$ 56,080,304	\$ 70,100,381
30	South Carolina	\$ 55,630,763	\$ 69,538,454
31	Oklahoma	\$ 55,068,836	\$ 68,836,045
32	Utah	\$ 52,933,514	\$ 66,166,892
33	Connecticut	\$ 51,697,275	\$ 64,621,593
34	Mississippi	\$ 49,224,796	\$ 61,530,995
35	Montana	\$ 48,775,255	\$ 60,969,068
36	Nevada	\$ 44,055,069	\$ 55,068,836
37	West Virginia	\$ 44,055,069	\$ 55,068,836
38	Nebraska	\$ 41,245,434	\$ 51,556,793
39	New Mexico	\$ 40,346,351	\$ 50,432,939
40	Maine	\$ 39,222,498	\$ 49,028,122
41	Idaho	\$ 37,311,946	\$ 46,639,933
42	New Hampshire	\$ 28,883,043	\$ 36,103,803
43	Puerto Rico	\$ 28,770,657	\$ 35,963,321
44	North Dakota	\$ 28,321,116	\$ 35,401,395
45	South Dakota	\$ 26,073,408	\$ 32,591,760
46	Wyoming	\$ 23,713,315	\$ 29,641,644
47	Vermont	\$ 20,116,983	\$ 25,146,229
48	Delaware	\$ 15,396,797	\$ 19,245,996
49	Rhode Island	\$ 13,036,704	\$ 16,295,880
50	Hawaii	\$ 8,204,133	\$ 10,255,166
51	Alaska	\$ 7,305,050	\$ 9,131,312
52	District of Columbia	\$ 2,922,020	\$ 3,652,525
53	Guam	\$ 1,798,166	\$ 2,247,708
54	Mariana Islands	\$ 1,573,395	\$ 1,966,744
55	Virgin Islands	\$ 1,123,854	\$ 1,404,817
56	American Samoa	\$ 674,312	\$ 842,890

Source: NTIA Funding Level Determination (FLD), September 29, 2017.