Before the
National Telecommunications Information Administration
Washington, D.C. 20230

Request for Information Comprehensive Network Solutions	))))	Solicitation Number: SA1301-12-RP-0016-b

COMMENTS OF NTCA–THE RURAL BROADBAND ASSOCIATION

October 27, 2014

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I. INTRODUCTION AND SUMMARY

NTCA–The Rural Broadband Association ("NTCA")[1] hereby submits these comments in the above captioned proceeding.[2] NTCA represents nearly 900 small rural network service providers that use valuable wired and wireless networks, and other technical and operational assets, to serve the most sparsely populated and remotely located areas of our country.

To ensure adequate coverage in rural and remote areas, FirstNet should act as an integrator, leveraging existing rural commercial networks to the maximum extent possible. Overbuilding existing infrastructure would violate both the spirit and the letter of the Middle Class Tax Relief and Job Creation Act of 2012 ("the Act"), the overarching legislation which provides FirstNet with its authority. Moving beyond congressional intent, in sparsely populated, high-cost rural areas, overbuilding areas sufficiently served by rural providers is wasteful and unnecessary, and would quickly deplete the entire $7 billion network construction budget allocated to FirstNet. It would also put existing networks at financial risk, jeopardizing

[1] NTCA represents nearly 900 rural rate-of-return regulated telecommunications providers. All of NTCA's members are full service rural local exchange carriers ("RLECs") and broadband providers, and many of its members provide wireless, cable, satellite, and long distance and other competitive services to their communities. Each member is a "rural telephone company" as defined in the Communications Act of 1934, as amended.

[2] See *Request for Information Comprehensive Network Solutions, Solicitation No.* SA1301-12-RP-0016-b. *(rel. Sept. 17, 2014).* ("RFI").

consumer access to affordable mobile broadband in rural areas. Rather, an integrated National Public Safety Broadband Network ("NPSBN") is the most efficient and effective solution, enabling FirstNet to speed time-to-deployment, decrease implementation costs, and create synergies with existing Federal programs, which provide loans and grants for the construction of broadband infrastructure.

Rural providers have a vast array of infrastructure and assets that should be leveraged by FirstNet for the construction of the public safety network in rural areas, such as statewide fiber transport connectivity in 25 primarily rural states; extensive copper and fiber infrastructure, including last-mile networks suitable for the speeds that will be required by FirstNet's network; utility poles; wireless networks and towers; rights-of-way; and local operational and technical resources. Rural providers have experienced technicians on the ground in rural America who are experts in the unique terrain and geographic challenges related to designing, constructing, maintaining and evolving a wireless network within their service territories. Rural service and transport providers also are community-based and their overarching mission is to serve the needs of their local residents.

Rural service providers continually re-invest in their networks, and can upgrade their infrastructure more cost-effectively and efficiently than a new entrant building for the first time into such service areas. In addition, the wireless and wireline assets of rural telecom service and transport providers can be seamlessly integrated with those of other FirstNet partners, including other rural carriers, and Tier 1 and Tier 2 commercial Mobile Network Operators ("MNOs"). To assist with communications and negotiation, statewide fiber networks can serve as liaisons between rural telecommunications providers and FirstNet.

Put quite simply, FirstNet's dollars cannot go far enough and achieve its intended purpose without leveraging these kinds of existing network assets in the nation's most high-cost areas.

For their part, large MNOs cannot offer a cost-effective or efficient solution in rural areas. Satellite service is less-than-optimal and should only be used in areas where traditional terrestrial service is unavailable or too expensive to construct despite existing resources. Likewise, deployable assets should only be used as a last resort.

To maximize the utilization and monetization of its assets, FirstNet should create multiple Covered Leasing Agreement ("CLA") models to entice varied providers of all kinds to enter into partnership agreements. FirstNet also should create standard lease terms and conditions, which are offered to urban and rural commercial operators alike. If FirstNet elects to lease the spectrum, it should carve the spectrum into smaller segments, on a market-by-market basis, according to Cellular Market Areas ("CMAs"). FirstNet also should create lease terms in terms of time that are conducive to commercial network operations, providing operators with long-term leases (i.e. 20 years or more).

Measurable and enforceable rural milestones will ensure that FirstNet and its network partners are required to develop and deploy a rural solution. In regard to system hardening, rural service and transport providers stand ready to satisfy standards with respect to system reliability and resilience. Rural service providers also have first-hand experience balancing the need and costs for hardening in local areas. As such, on a state-by-state basis, FirstNet should ensure that its rural telecom providers are present for individual consultations with state Points of Contact ("POCs") to discuss the specific, unique tradeoffs between network resiliency and reliability, and the associated costs.

II. TO ENSURE ADEQUATE COVERAGE IN RURAL AND REMOTE AREAS, FIRSTNET SHOULD ACT AS AN INTEGRATOR, LEVERAGING EXISTING RURAL COMMERCIAL NETWORKS TO THE MAXIMUM EXTENT POSSIBLE (QUESTIONS 1, 2, 3, 4, 5, 18, 19)

An integrated NPSBN is the most efficient and effective solution. As such, in drafting the Act, Congress clearly intended that FirstNet should maximize, in all cases, its use of existing communications infrastructure. Given limited financial resources and a vast country to cover, FirstNet—and the American public—would be best served by leveraging the expertise and presence of existing rural service providers with deep experience and deployed network assets in hard-to-serve areas, in lieu of seeking to create all aspects of an interoperable 4G wireless network from whole cloth.

Integrating rural telecom providers' infrastructure and assets into the new NPSBN will allow FirstNet to speed infrastructure deployment and, therefore, hasten network availability for public safety officials. FirstNet also will benefit from decreased implementation costs, as it will not have to construct, from scratch, brand new wireless towers and foundational backhaul infrastructure. In addition, by leveraging existing rural assets, FirstNet will create synergies with Federal programs such as the American Recovery and Reinvestment Act ("ARRA") Broadband Technology Opportunities Program, the ARRA Broadband Initiatives Program, the U.S. Department of Agriculture ("USDA") Telecommunications Infrastructure Loan Program, and the USDA Broadband Loan Program, which provide loans and/or grants to rural service providers to construct network infrastructure.

As rural telecom providers can attest, and as evidenced by the deficiency of infrastructure and adequate coverage in high-cost rural areas served by larger MNOs and price-cap wireline providers, building and maintaining a next-generation telecommunications network in rural America is an incredibly expensive, time consuming, and challenging undertaking. Rural areas

pose unique hurdles for wireless network operators, which are unlike those encountered via urban wireless deployments. However, an integrated NPSBN is the most efficient and effective solution, allowing FirstNet to leverage the first-hand expertise of rural network providers, and the infrastructure and assets that they have constructed, and evolved, over time.

A. FirstNet has a Legal Obligation to Utilize Existing Infrastructure

As evidenced by the Act,[3] Congress intended FirstNet to take every opportunity to utilize network infrastructure already in place. To begin with, Section 6206(b)(1)(C) of the Act requires *proposals* filed in response to FirstNet Requests for Proposals ("RFPs") to leverage existing infrastructure. In addition, Section 6206(b)(3) requires FirstNet to seek out proposals that leverage existing infrastructure. And finally, and perhaps most importantly, Section 6206(c)(3) of the Act states that FirstNet "shall enter into agreements to utilize, to the maximum extent economically desirable" existing infrastructure. Each of these provisions, when taken together, clearly indicate that Congress intended the use of existing infrastructure to be a part of the process *at each and every step*, from the creation of RFPs by FirstNet to their submission by interested entities to the final selection of entities with which FirstNet enters into agreements. In other words, the use of existing infrastructure is a fundamental part of the process and its repeated mention throughout Section 6206 is a strong if not conclusive manifestation of congressional intent. As such, FirstNet has a clear statutory obligation to utilize existing commercial infrastructure and assets as it seeks to create the NPSBN.

[3] Middle Class Tax Relief and Job Creation Act of 2012, Public Law 112-96, 126 Stat. 156, Sections 6206(b)(3), (b)(1)(c) (2012).

B. Overbuilding Existing Networks is Wasteful and Unnecessary, and Would Quickly Deplete FirstNet's $7 Billion Network Construction Budget

Moving beyond congressional intent, FirstNet should not waste scarce resources and public funds to overbuild an existing rural network that already has sufficient capacity and robust redundancies to handle public safety traffic. In sparsely populated, high-cost rural areas, overbuilding areas sufficiently served by rural providers is wasteful and unnecessary, and would quickly deplete the entire $7 billion network construction budget allocated to FirstNet. It would also put both existing and new networks alike at financial risk, jeopardizing sustainable consumer access to affordable mobile broadband in rural areas.

In some areas, existing networks may not be adequate for FirstNet's requirements. However, FirstNet should not fall into a trap of reviewing current network infrastructure and assuming that if an asset is not available today that this means it needs to build it on its own. Indeed, a static snapshot of today's infrastructure would be most misleading. It would still be more cost-effective and efficient for FirstNet to partner with rural providers to share the cost for upgrades and leverage existing assets where in place rather than construct new infrastructure from scratch and consequently overbuild existing networks. Rural service providers are willing and able to invest in their networks, and, in fact, they have an established and lengthy history of advancing their networks, services, and products as technology has progressed and end-user demands have changed.

In the past, despite the existence of rural assets, some local governments established dedicated broadband networks, typically for use by education and health care institutions. While such "public" networks do not serve the population ubiquitously, as the rural carriers do, they still "compete" by locking up some of the largest consumers of bandwidth—community anchor institutions—in the area and thus create economic pressures in many areas that cannot sustain

multiple providers. It is unclear whether these entities, who are not "in the business" of operating advanced networks in the first instance, are adequately equipped to provide their "internal" networks to outside parties like first responders who need mission-critical and reliable access. FirstNet should, therefore, take into account whether partnering with local governments in high-cost, low-density rural areas would ensure sufficient and reliable assets for use by FirstNet and first responders, and whether doing so might also put the existing commercial network at risk, thereby threatening the ability of rural customers to access high-quality affordable broadband service, including emergency service.

For similar reasons, FirstNet is prohibited from selling commercial services to anchor institutions or other end users, including last-mile connectivity and middle-mile capacity.[4] On its face, the statute is unambiguous in its intent to prohibit FirstNet from selling commercial services.[5] Particularly in sparsely-populated rural areas, "cherry-picking" the most attractive, high-volume, lucrative customers consequently leaves the most costly-to-serve remnants of the serving area to carriers of last resort, and thus reduces carriers' ability to invest in their networks and *increases* the existing service provider's reliance upon (and demand for) High-Cost Universal Service Fund support. If a number of revenue-generating anchor institutions are suddenly and artificially extracted from the customer base in the broader community, this likely will place unbearable pressure on the existing commercial service provider and its consumers. It also makes little sense to cherry-pick customers from the existing service providers, as Congress clearly intended FirstNet to use the facilities of those network providers' to create the NPSBN.

[4] *See* Section 6212(a) of the Act.
[5] *See* Comments of NTCA–The Rural Broadband Association, In the Matter of First Responder Network Authority Proposed Interpretations of Parts of the Middle Class Tax Relief and Job Creation Act of 2012, Docket No. 140821696-4696-01, 79 Fed. Reg. 57058 (rel. Sept. 24, 2014).

Instead, consistent with good public policy, public safety should seek to utilize the existing assets and infrastructure of rural providers wherever possible.

C. Rural Providers Have a Vast Array of Existing Infrastructure and Assets that Should Be Leveraged by FirstNet

Rural telecom and transport providers have valuable assets in rural areas that should be of particular interest to the FirstNet and its mission, including transport connections, copper and fiber infrastructure, utility poles, wireless networks and towers, right-of-ways, and other operational and technical resources.

NTCA's nearly 900 members operate wireline networks in 45 states. On average, NTCA member companies' customer density is approximately 7 customers per square mile. By contrast, larger telecommunications companies, on average, serve 130 customers per square mile. As a result, NTCA's members serve the most rural and sparsely populated areas of the country with advanced telecommunications services.

One hundred percent of respondents to the *NTCA 2013 Broadband/Internet Availability Survey Report*[6] offer broadband[7] to some part of their customer base. Respondents use a variety of technologies, including 46% who offer broadband via copper, 29% who offer fiber to the home ("FTTH"), 12% fiber to the node ("FTTN"), 12% cable modem service, 0.4% licensed wireless, and 0.6% unlicensed wireless service, and 0.1% satellite. In addition, 65.5% of respondents' customers can receive a maximum downstream speed of greater than 10 Mbps. Existing copper and fiber optics infrastructure will be particularly useful for backhaul and middle-mile transport of traffic within the FirstNet network.

[6] To access the *NTCA 2013 Broadband/Internet Availability Survey Report*, visit http://www.ntca.org/images/stories/Documents/Advocacy/SurveyReports/2013ntcabroadbandsurveyreport.pdf.
[7] Broadband was defined as throughput of at least 768 Kbps in one direction.

Further, many respondents have plans to upgrade their access network with fiber infrastructure. Seventy-six percent of survey respondents indicated that they have a long-term fiber deployment strategy, and, of those respondents, 58% expect to offer FTTN to more than 75% of their customers by the end of 2016, while 61% of respondents expect to be able to provide FTTH to at least half of their customers by year-end 2016. An additional 17% have already completed FTTN deployment to all customers, and an additional 10% FTTH.

In addition to their last-mile networks, in 25 primarily rural states these same telecommunications cooperatives and small companies have formed statewide fiber network companies, interconnecting their local wireline and wireless networks throughout the region. These statewide fiber networks continue to add middle-mile and last mile fiber facilities. Of special note, 26 statewide fiber network providers have invested in INDATEL Services, LLC ("INDATEL"). INDATEL, www.INDATEL.com, has deployed aggregation Points of Presence that simplify connectivity to its member service providers. INDATEL's statewide fiber networks collectively serve 185 public safety answering points ("PSAPs") with fiber and have the ability to serve 645 PSAPs that are in close proximity to member's fiber facilities. INDATEL members provide the very important middle-mile fiber facilities connecting their rural telecom owners' last mile facilities to cell tower sites. INDATEL members have a long history of providing high-quality TDM and Ethernet circuit backhaul services to wireless carriers. Collectively, the INDATEL members are serving more than 4,500 cell sites with fiber.

Rural telecommunications providers also have invested considerable resources in and have considerable experience with wireless technology and operations, including providing high-speed connectivity to existing tower sites. According to the *NTCA 2013 Wireless Survey*

Report[8], 52% of survey respondents indicated that 100% of their existing wireless sites deployed are currently IP backhaul-ready.

To ensure the most efficient and effective deployment possible, FirstNet can and should leverage the experience of rural providers and the extensive network of rural mobile service providers' wireless towers for future cell sites. According to the NTCA Wireless Survey Report, the average total cumulative investment by respondents in wireless facilities, excluding spectrum, was $6.4 million per company ranging from a high of $114 million to a low of $7,000. Sixty percent of respondents assert that they offer wireless services to their customers. Further, 30% of respondents not currently offering wireless service indicated that they are considering doing so. In a testament to their rural service territories, survey respondents report that they serve an average of 10,163 wireless subscribers, with an average of 52 cell sites. However, a few larger respondents skew these numbers upwards; median number of wireless subscribers is 1,131 and the median number of cell sites is 16.

According to data collected by NTCA, rural telecommunications providers hold 700 MHz, AWS, and PCS spectrum licenses covering rural areas, which are identical to the spectrum assets the large MNOs are using to deploy LTE. When asked which wireless CMRS technologies their company has deployed, 48% percent of survey respondents indicated GSM service; 39% CDMA EVDO; 35% CDMA 1X; 30% HSPA+; 22% LTE; and 17% WiMax. Seventy-one percent of those survey respondents currently offering wireless indicated that they had plans to deploy next-generation technology. Of those, 80% said they would be deploying

[8] To access the *NTCA 2013 Wireless Survey Report*, visit http://www.ntca.org/images/stories/Documents/Advocacy/SurveyReports/2013ntcawirelesssurvey.pdf.

LTE technology. As such, in the future, the vast majority of rural service providers will have deployed LTE.

In areas without existing commercial wireless service where it may be necessary for FirstNet to deploy new wireless infrastructure, the rights-of-way and real estate assets of the telecom and transport providers should be applied in new site construction.

D. Rural Providers Have Unparalleled Technical and Operational Expertise in Rural and Remote Areas

In addition to their existing infrastructure, rural network service providers offer FirstNet the opportunity to leverage significant human resources. Rural providers have experienced technicians on the ground in rural America who can cost-effectively provide the operational and technical resources needed to deploy a next-generation, interoperable NPSBN. Rural telecom providers are experts in the terrain and geographic challenges within their service territories; they understand where local public safety coverage is needed most, and how to effectively set wireless assets to meet the end users' communications requirements. They also are experts at efficiently utilizing the assets that they have to meet the ever-increasing needs of their users.

For instance, in various venues, FirstNet has expressed an interest in microwave as a backhaul solution for the NPSBN in rural areas. In response to the NTCA Wireless Survey, 37% of respondents indicated that they use wireless spectrum for backhaul. Of those, 37% utilize licensed spectrum, while 63% use unlicensed spectrum. However, 51% said that the wireless spectrum they currently use for backhaul will not be adequate to meet their forecasted future needs. NTCA members qualitatively report that wireless is an ineffective backhaul solution when faced with subscriber demands for LTE technology. However, rural telecommunications providers operate widespread wireline backhaul networks that provide superior bandwidth,

reliability and resiliency, as evidenced by the statewide fiber networks discussed above and represented collectively by INDATEL.

Further, when the NPSBN is subject to critical outages via man-made or natural disasters, given their physical presence in rural areas, these providers are "first responders" themselves—they are better positioned than any other carrier or operator to provide on-the-ground network operational and technical support to ensure the FirstNet network is repaired and restored to service as soon as possible.

Rural service providers are community-based and their overarching mission is to serve the needs of their local residents. As such, many rural infrastructure providers have established long-standing relationships with local communities generally, and tribal leaders more specifically. NTCA members include both tribally owned telecommunication companies such as Gila River Telecommunications, Inc., owned by the Gila River Indian Community in Chandler, Ariz., and Fort Mojave Telecommunications Inc., located in Mohave, Valley, Ariz. NTCA's membership also includes companies that are managed by non-natives but serve substantial portions of tribal lands such as Golden West Telecommunications, a member-owned cooperative headquartered in Wall, S.D., and Midstate Communications located in Kimball, S.D. NTCA has at least 36 member companies that serve Native Nations.

E. Rural Networks Can Be Seamlessly Integrated with Other FirstNet Partners and Statewide Fiber Networks Can Serve as Central Communications and Negotiation Points within Each State (Question 19)

The wireless and wireline assets of rural telecom service providers can be seamlessly integrated with those of other FirstNet partners, including other small rural carriers and Tier 1 and Tier 2 commercial MNOs. As part of their current operations, rural wireless service providers often provide fiber backhaul connectivity for Tier 1 and Tier 2 wireless providers, and,

in places where the larger carriers do not offer native service, mobile roaming capabilities for the customers of large MNOs. In addition, rural wireline providers interconnect with larger providers at established, central locations. These interconnection agreements often are negotiated and arranged via state or regional networks, which are owned and operated by a consortium of local rural telcos. Taken as a whole, rural carriers are technically adept at interconnection arrangements and work hand-in-hand with larger carriers to provide service to the end user. Likewise, FirstNet will be able to partner and interconnect with a variety of rural telecom providers, without any unusual technical standards, specifications, or restrictions.

As noted previously, in 25 primarily rural states, small rural telecommunications companies have formed statewide fiber networks, interconnecting their local wireline and wireless networks throughout the region. This scope and capability could be very helpful to FirstNet in carrying out its mission. The statewide fiber networks can act as central communications hubs, providing the FirstNet board and state POCs with vital information in regard to local assets and infrastructure. Statewide networks routinely survey their members on a variety of issues, creating and managing listservs through which network providers share data and information on best practices and lessons learned, and mapping the assets of their memberships, including the wireless sites and fiber backhaul capabilities of their members.

These statewide networks also can serve as central facilitators and negotiating points of contact between FirstNet and rural service and transport providers, enabling FirstNet to communicate, collaborate, and negotiate with one central point of contact within the state for rural wireline, and, perhaps, also wireless services.

F. Large Mobile Network Operators Cannot Offer a Cost-Effective or Efficient Solution in Rural Areas, or Achieve the Degree of Coverage Specified for Rural Public Safety Needs

Although it may be tempting for FirstNet to partner with only one or two of the large MNOs for the NPSBN construction, these partnerships would be neither cost-effective nor efficient for rural areas of the country. Despite their extensive networks, large wireless providers generally focus their activities around more populated areas, and have traditionally declined to build out their networks in rural areas. They also lack local presence, meaning that mean time to restore and repair can be more difficult in the remote and rural areas that smaller providers call home. As NTCA has highlighted in past proceedings,[9] when left to their own tactics, large operators typically focus capital investments on urban areas with concentrated population centers, while licensed spectrum in rural areas lies fallow. Historically, "nationwide" wireless providers do not provide service in rural areas, or, if they do, the implementation timeline is significantly longer than that in urban areas.

For example, the top 250 Cellular Market Areas contain approximately 74% of the total U.S. population but encompass just 14% of the total U.S. land area. This is a stark contrast to

[9] As NTCA has noted:

> The large carriers argue that if it was economically beneficial for them to deploy services in a particular area, they already have the incentive to do so without regulatory intervention. This large carrier argument is a prime example of the different incentives driving large carriers and small carriers. Large carriers ignore the less dense and less lucrative markets because it is easier to make quick profits in densely populated areas or high usage corridors. Their cost-benefit analysis does not include a look at the needs of a particular community. If they can make enough money by serving an area, or freeing the spectrum, they will do so. If it's not financially worth their trouble, they will not. Small carriers, in contrast, are situated in the communities they serve. . . A cost-benefit analysis includes a look at the rural community's needs. What may be considered a longer term and too risky investment to a large carrier, can be a necessary one to a rural carrier. Wireless carriers that are not willing to risk their capital in rural areas should not also be permitted to hold the unused spectrum hostage.

See In the Matter of Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies To Provide Spectrum-Based Services; 2000 Biennial Regulatory Review Spectrum Aggregation Limits For Commercial Mobile Radio Services; Increasing Flexibility To Promote Access to and the Efficient and Intensive Use of Spectrum and the Widespread Deployment of Wireless Services, and To Facilitate Capital Formation (WT Docket No. 02-381, 01-14, 03-202), Comments of the National Telecommunications Cooperative Association, January 14, 2005.

America's independent telephone systems, which serve more than 40% of the nation's landmass, but less than 5% of the nation's telephone subscribers.

To the extent that national providers do operate in rural areas, MNOs tend to focus their coverage around highway systems, ignoring the surrounding residential areas and rural parts of the country (including state highways and local roads over which many first responders must travel to reach emergency sites). This isolated coverage is not conducive to FirstNet's mission or the needs of rural first responders. That means in many rural areas, a smaller rural-focused operator is the best and perhaps only resource with whom FirstNet might roam or consult on the construction of the NPSBN.

In areas where they do operate, the "national" MNOs often do not own their vertical assets; instead these assets are owned by companies that specialize in the construction and operation of these assets who lease the infrastructure to the MNOs. In rural areas, the MNO backhaul facilities and wired infrastructure often are supplied by rural telecommunications and transport providers.

In short, FirstNet should ensure that its partnership agreements do not become "lock-ups" with a few large wireless providers that offer little in the way of vertical assets and infrastructure in rural areas. Instead, to maximize reach, leverage expertise, and improve the economies of network deployment, FirstNet should ensure that it seeks out the best partners and resources in each area in which it deploys.

G. Satellite Cannot Offer the Same Quality of Service as Traditional Terrestrial Mobile Solutions

Satellite Internet access service should only be used where there is no other wireless or wireline terrestrial service available to support the NPSBN or it is too expensive to construct. Although the major satellite providers have deployed next-generation technologies, their service

is limited at best in the most rural portions of the nation. Further, although the next-generation of satellites may offer a more compelling product in places where it is available, it is unclear how this service will perform over time and if it will resolve longstanding issues associated with satellite Internet access. For instance, by its very nature, satellite service is subject to weather disturbances, sun fade, and tree cover that interfere with the wireless signal. Over time, the satellites likely will become congested with commercial users vying for bandwidth; indeed, there are indications already that new orders for satellite services in certain areas may be limited due to such concerns. For first responders who expect a reliable NPSBN, these limitations should give significant pause. As such, satellite is a less-than-optimal service and should only be used in areas where traditional terrestrial service is not available or is too expensive to construct.[10]

H. Given the Time Lag to Deployment, Deployable Solutions Should Only Be Relied Upon as a Last Resort

Likewise, given the time lag to deployment, deployable solutions, such as cells on wheels, should only be relied upon as a last resort in areas of the country where an existing wireless network does not exist and the cost-benefit analysis for constructing new terrestrial coverage is not proven. Given the unforgiving terrain and distance from urban centers, it will take significant time for a deployable asset to be provisioned for use by public safety officials in an emergency situation. In addition, deployable assets will still require adequate backhaul to

[10] *In 2013, NTCA filed a White Paper with the Federal Communications Commission ("FCC") showing that, contrary to satellite provider claims, satellite is not functionally equivalent to terrestrial service, especially in northern locations. See* Vantage Point, Analysis of Satellite-Based Telecommunications and Broadband Services (November 2013), attachment to Letter from Michael Romano, NTCA – The Rural Broadband Association, to Marlene H. Dortch, FCC, WC Docket No 10-90 (filed November 7, 2013). *In addition, during a March 19, 2014, FCC hearing on the Rural Broadband Experiments, a witness from the California Public Utilities Commission asserted that, due to its latency limitations, satellite is not considered broadband service in that state. See* Statement of Catherine Sandoval, Commissioner, California Public Utilities Commission (March 19, 2014), http://www.fcc.gov/events/rural-broadband-workshop (beginning at 210:11). Retrieved October 23, 2014.

maintain robust communications near the scene of the incident. In other words, a deployable asset does not resolve the need for adequate, efficient, and affordable backhaul capacity, and the challenge that this poses in rural areas.

III. TO MAXIMIZE THE UTILIZATION AND MONETIZATION OF ITS ASSETS, FIRSTNET SHOULD CREATE MULTIPLE CLA MODELS (QUESTIONS 5 AND 6)

In rural areas, first responders may not need access to the entire 22 MHz of spectrum set aside for their use. As such, FirstNet spectrum can be used to provide broadband and other essential services, while still easily reserving adequate capacity for public safety needs.

FirstNet should create multiple CLA models to entice rural providers to enter into network partnership agreements, and, therefore, enable FirstNet to diversify its revenue streams. Rural telecommunications service providers have varied business plans and likely will be interested in partnering with FirstNet in several different ways. For instance, rural service providers may offer FirstNet the use of their existing commercial wired and/or wireless assets in exchange for monetary compensation. In another potential network model, rural service providers may be interested in the exchange of existing commercial assets for access to FirstNet's 700 MHz spectrum. Under this partnership model, the rural provider would utilize FirstNet's spectrum, on a secondary basis, to fulfill local needs. For instance, in areas where there is no existing rural commercial wireless service provider, rural telecommunications providers would greatly benefit from access to the network, on a secondary basis, in order to provide commercial broadband service to under/unserved rural areas.

Another alternative partnership model would entitle FirstNet to utilize existing commercial assets and infrastructure in exchange for the rural network provider to access FirstNet's network capacity on an MVNO-like basis. The rural provider would be able to offer

compelling mobile broadband service in its local area, with the added bonus of access to the nationwide FirstNet network for roaming, and network equipment and customer handsets that have been developed for this slice of spectrum. As such, FirstNet should create several model CLAs to entice varied small and rural commercial operators to participate.

FirstNet also should create standard lease terms and conditions, which are offered to urban and rural commercial operators alike. In regard to specific CLA terms and conditions, if FirstNet elects to partition its spectrum for CLAs, it should carve the spectrum into smaller segments, on a market-by-market basis, according to CMAs. Smaller license sizes will increase participation by rural and regional operators, which cannot afford to bid, acquire, and build out large swaths of landmass that extend well beyond their local areas. Smaller license sizes will ensure that FirstNet monetizes its assets to the fullest extent possible. In addition, the technology has been available for years to allow for seamless operations when users move between CMA markets. FirstNet also should create lease terms in terms of time that are conducive to commercial network operations. Commercial operators will need to invest significant capital to construct wireless infrastructure in this new spectrum band and each company will need to make the business case for why this is a smart financial decision. As such, commercial operators will need to enter into CLAs that provide a long-term lease (i.e. 20 years or more) of the spectrum assets.

IV. TO SATISFY ITS STATUTORY RESPONSIBILITY, FIRSTNET SHOULD CREATE SUBSTANTIAL RURAL COVERAGE MILESTONES (QUESTION 11)

As FirstNet noted in its RFI, it has a statutory responsibility to ensure that rural areas of the country gain access to the NPSBN and are not left behind their urban counterparts without access to this vital communications and public safety resource. Milestones are necessary to

ensure that rural areas of the network are taken into primary consideration when the network is designed and deployed.

This statutory requirement underscores the fundamental need for FirstNet to create partnerships with existing rural providers. As previously noted, rural network service providers are community-based and, therefore, invested in the health, safety, and vitality of their local areas. They have substantial technical expertise and experience with building and operating rural networks, and significant existing assets and infrastructure, which can be of service to FirstNet as it strives to achieve these rural milestones. In contrast, as evidenced by their current assets and infrastructure, large carriers historically concentrate their efforts on serving the urban population and city centers first, largely ignoring rural areas of the country. In addition, the equipment manufacturers historically prioritize the needs of large MNOs above that of rural telecom providers. As such, any rural timeline or milestones that are adopted should be realistic, providing rural carriers and first responders with the necessary time to gain access to the equipment.

V. FIRSTNET SHOULD INCORPORATE THE UNIQUE FIRST-HAND EXPERIENCE OF RURAL TELCOS TO BALANCE ENVIRONMENTAL HARDENING WITH THE COSTS TO ACHIEVE SYSTEM RELIABILITY AND RESILIENCY (QUESTIONS 12, 13 AND 14)

Rural telecom providers are intimately familiar with the need to balance network hardening and the related expenditures, as they often operate in rural and remote areas with difficult terrain, severe environmental conditions, and specific national or homeland security needs. Based upon their geography, terrain, typical weather patterns, and specific customer needs, rural telcos determine how their networks should be designed, deployed, maintained, upgraded, and evolved.

For instance, Big Bend Telephone Co. ("BBT") headquartered in Alpine, Texas, plays a strategic role in assisting federal, state, and local agencies in securing the United States/Mexico border. BBT provides communications services to more than 18,000 square miles of desert terrain, including 485 miles of the border. Within BBT's service territory, there are two border patrol station headquarters, three border patrol checkpoints, two ports of entry, the U.S. Air Force Tethered Aerostat Radar System Balloon, and numerous other border security institutions. The extreme terrain and large amount of border that has to be covered poses unique challenges to all public safety entities. This means that broadband technology is an especially crucial element to meet the area's homeland security needs. Because of BBT's next-generation fiber optic broadband network, a variety of applications can be facilitated such as surveillance cameras, thermal-imaging devices, X-ray units at checkpoints, and partially buried ground sensors. BBT also sustains the radio networks utilized by local and county law enforcement agencies, aggregating public safety communications traffic over the rural telco's fiber optic network. This helps agencies cut down on the number of "boots on the ground" personnel while still providing coverage and oversight along the extensive southern border. In regard to system hardening, BBT is building a new sovereign fiber ring, which will expand its network in the Eastern direction and provide a redundant path from its existing fiber ring that goes West. This will ensure that its network is even more resilient and reliable. With the oil boom continuing to explode in West Texas, fiber cuts are unfortunately becoming more of a concern, and this route east is in the opposite direction of the oil field traffic. The new fiber ring is expected to be complete in 2015.

Across the country, Enhanced Telecommunications Corp. ("ETC"), located in Sunman, Ind., provides 4G LTE fixed wireless service and wireline fiber connectivity to public safety officials. In Decatur County, Ind., ETC is leasing dark fiber to the police department, city hall,

jail, courthouse, and sheriff's department (as well as other ancillary offices). This has enabled local public safety officials in both the city and county government to leverage ETC's commercial network, which is financially efficient, as opposed to building and maintaining their own private networks. In regard to the sheriff's department, portions of the network connection are fully redundant. The sheriff's department is located in a unique location that allows for diverse fiber entrance into the building. ETC has provided these two separate connections into the building from separate parts of the ring. Therefore, if one connection breaks, the building will retain a portion of its services through the other fiber connection.

Panhandle Telephone Cooperative, Inc., ("PTCI"), located in Guymon, Okla., offers fixed wireless LTE service to its customers, operating in 700 MHz spectrum. PTCI has an excellent working relationship with its public safety officials, providing mobile services to its first responders. In addition, the telco has hardened its network to account for severe environmental conditions, including storms, tornados and winter blizzards. Equipment, including back-up generators, is sheltered at each tower location. PTCI's wireless network relies upon a robust fiber network with self-healing fiber rings, which provide physically redundant paths to and from voice/data cores.

These are just a few of the examples where NTCA members have worked hand-in-hand with public safety to determine the cost-benefit analysis of system hardening and also satisfy their communications requirements. As such, on a state-by-state basis, FirstNet should ensure that rural telecom providers are present for individual consultations with state POCs to discuss the specific, unique tradeoffs between network resiliency and reliability versus the associated costs.

Rural service providers stand ready to satisfy any standard that FirstNet may set in the delivery of public safety communications, including hardening their networks to accommodate FirstNet's requirements. As a byproduct, commercial networks will benefit from any additional system hardening, whereby the public will have access to a more resilient and reliable commercial network.

VI. CONCLUSION

An integrated NPSBN is the most efficient and effective solution, enabling FirstNet to speed time-to-deployment, decrease implementation costs, and create synergies with existing Federal programs, which provide loans and grants for the construction of broadband infrastructure. It also is consistent with FirstNet's statutory obligations to utilize existing infrastructure.

Rural providers have a vast array of existing infrastructure and assets that should be leveraged by FirstNet for the construction of the public safety network in rural areas. The wireless and wireline assets of rural providers can be seamlessly integrated with those of other FirstNet partners, including Tier 1 and Tier 2 MNOs, without any unusual technical standards, specifications or restrictions. NTCA's members also have substantial experience developing creative solutions to meet the communications needs of local public safety agencies, and have demonstrated considerable interest in continuing their public safety partnerships with FirstNet. In addition, on a statewide level, the state fiber networks could serve as central communications and collaboration points for interaction and negotiation with their rural telco members.

To maximize the utilization and monetization of its assets, FirstNet should create multiple models for CLAs, and standardized leasing terms for both urban and rural commercial operators alike. Spectrum should be partitioned in CMAs and FirstNet should create long-term

(i.e. 20 years or more) lease terms. To meet its statutory obligation, FirstNet should create substantial rural coverage milestones.

NTCA members stand ready to satisfy any standard that FirstNet sets with regard to system hardening. Rural telecom providers are intimately familiar with the need to balance network hardening and the related expenditures, as they operate in rural and remote areas with difficult terrain, severe environmental conditions, or homeland security needs. On a state-by-state basis, as FirstNet seeks to further examine how to harden its network, it should ensure that its rural telecom providers are present for individual consultations with state POCs to discuss the specific, unique tradeoffs between network resiliency and reliability, versus the associated costs.

Respectfully submitted,

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