

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Wireless Telecommunications Bureau Seeks	)	WT Docket No. 16-137
Comment on the State of Mobile Wireless	)	
Competition	)	

**COMMENTS OF  
THE RURAL WIRELESS ASSOCIATION, INC.**

**RURAL WIRELESS ASSOCIATION, INC.**

Caressa D. Bennet, General Counsel  
Daryl A. Zakov, Asst. General Counsel  
Anthony K. Veach, Sr. Regulatory Counsel  
P.O. Box 50551  
Arlington, VA 22205-5551  
(202) 551-0010

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**TABLE OF CONTENTS**

**SUMMARY ..... i**

**ISSUES PERSIST IN OVERRELYING ON FCC FORM 477 COVERAGE DATA TO  
COMPILE THE NINETEENTH REPORT..... 2**

**THERE ARE TRENDS THAT IMPACT NETWORK COVERAGE IN RURAL AREAS. 4**

**“Legacy” CDMA And GSM Networks Will Be Needed For Some Time To Ensure  
Universal Voice Coverage..... 4**

**Small Rural-Based Providers Focus On Providing Robust Coverage Throughout Their  
Entire Service Areas, While Nationwide Providers Typically Focus On Population  
Centers And Major Roadways..... 6**

**Small Rural-Base Providers’ Limited Ability To Enter Into Data Roaming Agreements  
Negatively Impacts Mobile Wireless Competition. .... 8**

**SPECIFIC, PREDICTABLE, AND SUFFICIENT UNIVERSAL SERVICE SUPPORT IS  
NEEDED TO SUSTAIN AND ADVANCE THE AVAILABILITY OF MOBILE  
SERVICES IN RURAL AREAS. ANY DECREASE IN OR ELIMINATION OF  
UNIVERSAL SERVICE SUPPORT WILL HAVE A DETRIMENTAL IMPACT ON  
MOBILE WIRELESS COMPETITION AND THE OVERALL HEALTH OF THE U.S.  
MOBILE WIRELESS INDUSTRY.... 10**

**SPECTRUM AUCTION POLICY DECISIONS CAN BE USED TO IMPROVE MOBILE  
WIRELESS COMPETITION.....12**

## SUMMARY

RWA strongly supports a meaningful, comprehensive examination of mobile wireless industry competition and appreciates the opportunity to provide input that will aid the Bureau in this endeavor. As explained in RWA's comments, there are a number of important issues that impact mobile wireless competition in the U.S. that deserve further examination.

While the Bureau anticipates using FCC Form 477 coverage data to compile the *Nineteenth Report*, as well as data from Mosaik data and other sources, the Bureau should not over-rely on FCC form 477 coverage data, and should acknowledge that Form 477 data contains inaccuracies and often overstates available mobile coverage throughout the U.S. RWA also notes that a number of issues call into question the accuracy of Form 477 data's depiction of mobile wireless coverage. For example, FCC Form 477 data generally shows where carriers have reported that mobile wireless coverage is available, but it does so with the assumption that the advertised speeds are available throughout the entire geographic area at all times. In the real world, this is *not* the case. There are numerous factors that impact a consumer's experience on a mobile wireless network.

There are three specific noteworthy trends in mobile wireless network deployment that impact wireless competition in rural areas. One trend that the Bureau should take note of as it compiles the *Nineteenth Report* is that the slow implementation of voice over LTE service will require availability of legacy CDMA and GSM networks for some time to ensure universal voice coverage. Despite the growing use of LTE networks that provide high-speed mobile data services, carriers of all sizes continue to rely on 3G or even 2G CDMA and GSM networks to provide mobile voice services, especially in non-urban, sparsely populated markets. Another trend is coverage and buildout strategy. With respect to many parts of rural America, nationwide

providers tend to focus coverage only on towns and major highways, and they often place sparsely populated areas at the very bottom of their network upgrade list. In contrast, rural-based providers tend to prioritize and value customer experience when it comes to network coverage by making every effort to provide robust coverage throughout all parts of their service area, even outside of towns and miles from public roads. One last important trend in wireless network deployment involves roaming. Rural-based provider' limited ability to enter into data roaming agreements with the largest mobile wireless carriers negatively impacts wireless competition.

For over a decade, universal service support has enabled small, rural-based providers to bring mobile wireless service to the most rural and remote areas of the country. Specific, predictable, and sufficient universal service support is needed to sustain and advance the availability of mobile services in rural areas. Any decrease in or elimination of universal service support will have a detrimental impact on mobile wireless competition and the overall health of the U.S. mobile wireless industry. The need for dedicated support for mobile voice and broadband services remains as critical as ever, and it will persist as wireless networks evolve to 5G mobile technologies.

One final issue that should be examined by the Bureau as it compiles the *Nineteenth Report* is spectrum auction policy. Two recent policy choices show that the Commission can promote mobile wireless competition through the design of spectrum auctions. The Bureau and Commission should take the lessons learned from these policy decisions and build on them when crafting future spectrum auctions, with the ultimate goal of promoting mobile wireless competition.

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To: The Wireless Telecommunications Bureau

**COMMENTS OF THE RURAL WIRELESS ASSOCIATION, INC.**

The Rural Wireless Association, Inc. (“RWA”)<sup>1</sup> files these comments in response to the Federal Communications Commission’s (“FCC” or “Commission”) Wireless Telecommunication’s Bureau’s (“Bureau”) public notice (“*Public Notice*”) requesting data and public input that will help it draft the *Nineteenth Report* on mobile competition.<sup>2</sup> RWA strongly supports the Commission’s meaningful, comprehensive examination of mobile wireless industry competition and appreciates the opportunity to provide input that will aid the Bureau in this endeavor. As explained below, there are a number of important issues that impact mobile wireless competition in the U.S. that deserve further examination by the Bureau.

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<sup>1</sup> RWA is a 501(c)(6) trade association dedicated to promoting wireless opportunities for rural telecommunications companies who serve rural consumers and those consumers traveling to rural America. RWA’s members are small businesses serving or seeking to serve secondary, tertiary, and rural markets. RWA’s members are comprised of both independent wireless carriers and wireless carriers that are affiliated with rural telephone companies. Each of RWA’s member companies serves fewer than 100,000 subscribers.

<sup>2</sup> *Wireless Telecommunications Bureau Seeks Comment On The State Of Mobile Wireless Competition*, WT Docket No. 16-137, Public Notice, DA 16-450 (Apr. 29, 2016) (“*Public Notice*”).

**I. ISSUES PERSIST IN OVERRELYING ON FCC FORM 477 COVERAGE DATA TO COMPILE THE NINETEENTH REPORT.**

In the *Public Notice*, the Bureau states that it anticipates using FCC Form 477 coverage data to compile the *Nineteenth Report*, as well as data from Mosaik and other sources, and asks for comment on ways to best ensure the accuracy of the report’s coverage data.<sup>3</sup> While FCC Form 477 coverage data may constitute a robust source of mobile broadband coverage data, the Bureau must acknowledge that Form 477 data contains inaccuracies and overstates available mobile coverage. In certain respects, FCC Form 477 mobile broadband coverage data may be more reliable than coverage information collected from other sources because Form 477 is a mandatory data collection effort by the FCC that requires mobile providers to certify the accuracy of their filings. However, Form 477 coverage data – filed by carriers with the FCC in shapefiles for each network technology – are still created by the individual carriers using different coverage propagation methodologies. In short, some will show more conservative depictions of coverage and some will show more liberal depictions of coverage. By virtue of their different (and naturally biased) origins, these data sources do not paint an accurate and complete picture of the availability of mobile services throughout the U.S.

The Bureau is aware that its various sources for mobile broadband coverage data are not entirely accurate. In the *Eighteenth Report*, the Bureau mentions that its analysis likely *overstates* the mobile coverage experienced by consumers because of carrier-reported Mosaik data limitations.<sup>4</sup> Likewise, the Bureau notes that coverage estimates based on Form 477 data are subject to methodological limitations, and consequently have the potential to overstate

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<sup>3</sup> *Public Notice* at p. 4.

<sup>4</sup> *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993: Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, WT Docket No. 15-125, Eighteenth Report, DA 15-1487, ¶34 (Dec. 23, 2015) (“*Eighteenth Report*”).

coverage.<sup>5</sup> FCC Form 477 data showing mobile wireless coverage has been publicly available for some time, and mobile wireless providers and industry stakeholders are continually analyzing and verifying that reflection of coverage data. RWA remains concerned that, even apart from the unreliability of Form 477 data due to overstated coverage, there may be too much reliance on Form 477 data, and notes that other issues also call into question the accuracy of Form 477 data's depiction of mobile wireless coverage throughout the U.S. The geographic breadth of wireless coverage is by no means the only factor determining whether the services offered in a coverage area are adequate, or even available. For example, FCC Form 477 data generally shows where carriers have reported that mobile wireless coverage is available, but it does so with the assumption that the advertised speeds are available throughout the entire geographic area at all times. In the real world, this is *not* the case. There are numerous factors that impact a consumer's experience on a mobile wireless network. For example, signal strength has a major impact on user experience. Signal strength is not constant throughout an entire cell sector and is weaker at the edge of a cell site. As a result, a user's location or distance to a cell tower can impact user experience. Though a consumer can connect to a cell site, the connection may not be strong enough to maintain a voice call or transfer data at advertised speeds.

Additionally, download and upload speeds are not constant throughout an entire cell sector and are impacted by many factors. The number of users within a cell sector will impact an individual user's ability to maintain advertised speeds. Bandwidth is finite. Anyone who has ever been to a large sporting event knows that wireless networks experience capacity constraints when a large amount of users try to access them all at the same time. In brief, Form 477 data provides a snapshot in time, but does not reflect the many factors that impact wireless service

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<sup>5</sup> *Eighteenth Report* at ¶35.

and the end user's overall experience. While FCC Form 477 coverage data is an important source of information for purposes of compiling the *Nineteenth Report*, the Bureau should continue to acknowledge the data's inaccuracies and that it overstates coverage in many cases.

## **II. THERE ARE TRENDS THAT IMPACT NETWORK COVERAGE IN RURAL AREAS.**

In the *Public Notice*, the Bureau requests input that will help it analyze the extent of mobile wireless network deployment on a nationwide basis and separately for rural and non-rural areas.<sup>6</sup> It specifically asks if there are noteworthy trends in deployment in rural areas and tribal lands, and it asks about the extent to which service providers offer coverage only in certain parts of these areas, such as near major roads, where they do not market service to residents of those areas. Additionally, the Bureau seeks information on service providers' use of roaming to provide services in areas where they lack facilities-based coverage. RWA provides answers to these questions below.

### **A. "Legacy" CDMA And GSM Networks Will Be Needed For Some Time To Ensure Universal Voice Coverage.**

One trend that the Bureau should take note of as it compiles the *Nineteenth Report* is that the slow implementation of voice over LTE ("VoLTE") service will require availability of "legacy" CDMA and GSM networks for some time to ensure universal voice coverage. Despite the growing use of LTE networks that provide high-speed mobile data services, carriers of all sizes continue to rely on 3G or even 2G CDMA and GSM networks to provide mobile voice services, especially in non-urban, sparsely populated markets. As the Bureau knows, CDMA and GSM technologies remain incompatible with each other (*i.e.*, GSM-based phones cannot be used to make voice calls on a CDMA network and vice versa).

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<sup>6</sup> *Public Notice* at p. 4 – 5.



Currently, there are many rural areas where mobile service is available from only two providers – one, a nationwide provider (usually either AT&T or Verizon) and the other, a small or regional mobile provider. Regardless of whether one or both carriers provide LTE, the nationwide carrier typically utilizes one underlying network technology (CDMA or GSM), while the rural carrier utilizes the other technology. For example, in an area where Verizon Wireless provides LTE service along with CDMA voice service, a small or regional carrier may be the only mobile wireless provider serving GSM customers throughout that entire area (including AT&T or T-Mobile customers who may be roaming on a rural carrier’s network). In this example, access to the rural carrier’s network, all GSM users would be without any service because they would be unable to connect to Verizon Wireless’ CDMA network for voice calls.

Moreover, carriers’ reliance on legacy voice networks will persist for the foreseeable future because the implementation of VoLTE (and rural LTE in general) has proved to be much slower than originally anticipated. It is evident that the mobile wireless industry is many years away from implementing VoLTE interoperability, let alone achieving nationwide VoLTE interoperability.<sup>7</sup> Nevertheless, nationwide carriers have begun to turn off parts of their 3G and 2G networks in order to re-farm spectrum for LTE. In areas where this will occur, it is possible that there could be no circuit switch fallback for certain mobile consumers, making VoLTE the only available voice option. For consumers whose handsets are not VoLTE-capable, this would

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<sup>7</sup> See Colin Gibbs, U.S. Cellular: CDMA carriers face a VoLTE “gap,” Fierce Wireless (May 6, 2016), available at <http://www.fiercewireless.com/story/us-cellular-cdma-carriers-face-volte-gap/2016-05-06> (explaining that nationwide carriers are in various stages of VoLTE rollouts); Phil Goldstein, *Verizon’s Small: We have close to 4M VoLTE customers*, Fierce Wireless (Aug. 11, 2015), available at <http://www.fiercewireless.com/story/verizons-small-we-have-close-4m-volte-customers/2015-08-11> (noting Verizon has only about four million VoLTE customers out of over 103 million total subscribers); Letter from Joseph P. Marx, AT&T, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, Third Progress Report on AT&T Commitments (Sept. 14, 2015) (discussing VoLTE roaming issues).

mean that there would be no voice option. As these situations arise, small and regional mobile providers' networks that provide GSM and CDMA voice service will become even more critical. There are E911 and public safety implications as well. Currently, VoLTE E911 calling is not widely available, and text-to-911 is only available in very few areas where carriers and Public Safety Answering Points (PSAPs) have implemented it.<sup>8</sup> RWA urges the Bureau to further examine this disconnect in the deployment of LTE technology and include its findings in the *Nineteenth Report*.

**B. Small Rural-Based Providers Focus On Providing Robust Coverage Throughout Their Entire Service Areas, While Nationwide Providers Typically Focus On Population Centers And Major Roadways.**

The Bureau specifically asks the extent to which service providers offer coverage only in certain parts of rural areas and tribal lands, such as near major roads, where they do not market service to residents of those areas.<sup>9</sup> With respect to many parts of rural America, nationwide providers often focus coverage only on towns and major highways, and they often place sparsely populated areas at the very bottom of their network upgrade list. Such a “sparse coverage” strategy may be acceptable to subscribers who are merely passing through a rural area, but it is not adequate for consumers that live and work there.

In contrast, rural-based providers tend to prioritize and value customer experience when it comes to network coverage. Instead of focusing only on population centers and major roadways, small rural-based providers make every effort to provide robust coverage throughout all parts of their service area because that is where their subscribers live and work, even if it is outside of towns and miles from public roads. Rural-based providers also are very aware of the

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<sup>8</sup> See *Seventh Annual Report to Congress on State Collection and Distribution of 911 and Enhanced 911 Fees and Charges for the Period January 1, 2014 to December 31, 2014*, Federal Communications Commission, ¶45 (Dec. 31, 2015).

<sup>9</sup> *Public Notice* at p. 5.

numerous economic reasons for bringing reliable mobile coverage to sparsely populated areas. For example, the use of Internet of Things (“IoT”) devices and M2M communications is becoming more and more prevalent in the nation’s rural-based agriculture economy. IoT devices and M2M communications include smart tractors, connected combines, remote-controlled Center Pivot Irrigation systems, livestock monitoring systems, and other precision agricultural devices, all of which allow producers to make significant gains in real-time productivity and cost management.<sup>10</sup> This technology needs wireless connectivity to function but IoT devices and M2M connections are often located in the sparsely populated areas that are far away from towns and major highways. Rural-based providers deploy network assets to these areas to ensure coverage is available where it is needed.

A rural-based provider’s decision to provide robust coverage throughout its entire service areas, rather than only providing service along major transportation routes or in population centers, results in additional capital expenses in the form of more radio access network equipment, more towers, and more “greenfield” backhaul facilities in adverse climates and terrains. In turn, these higher capital expenses result in higher operational expenses in the form of increased annual maintenance, administrative support, and software and hardware upgrades. Small rural-based providers are not able to spread capex and opex costs across a large network inventory and customer base like nationwide providers. Indeed, rural carriers typically pay

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<sup>10</sup> See Hearing Before the United States Senate Committee on Commerce, Science, and Transportation, *Removing Barriers to Wireless Broadband Deployment*, Testimony of Cory J. Reed, Senior Vice President, Intelligent Solutions, Deer & Company, p. 3 (Oct. 7, 2015); Letter from Robert A. Silverman, Counsel to Panhandle Telephone Cooperative, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket Nos. 10-90, 07-135, 05-337, 03-109, CC Docket Nos. 01-92, 96-45, GN Docket No. 09-51, WT Docket No. 10-208 (Dec. 17, 2014). See also David Evans, *Introducing the Wireless Cow*, Politico.com, available at <http://www.politico.com/agenda/story/2015/06/internet-of-things-growth-challenges-000098> (explaining how RFID tags are being used to monitor the health of dairy cattle and send alerts to their owners via an app on their mobile devices).

higher per-unit prices for access to the latest and greatest mobile device because they are seldom offered volume-based discounts from OEMs and distributors. Conversely, the Tier 1 nationwide providers are able to average the costs of their rural sites with their numerous and more return-on-investment-friendly urban and suburban sites. Rural-based providers simply do not have this option which creates a competitive disadvantage.

**C. Small Rural-Base Providers' Limited Ability To Enter Into Data Roaming Agreements Negatively Impacts Mobile Wireless Competition.**

The Bureau seeks information on service providers' use of roaming to provide services in areas where they lack facilities-based coverage.<sup>11</sup> It is well established in the record that small and regional mobile wireless providers depend on data roaming agreements with the country's four nationwide carriers (AT&T, Sprint, T-Mobile and Verizon) to ensure coverage on a nationwide or near nationwide basis. The ability to offer nationwide coverage to subscribers and prospective subscribers is seen as a competitive necessity for facilities-based, domestic mobile wireless providers. American consumers have simply come to expect nationwide coverage without added retail roaming rates, and small and regional providers simply cannot provide facilities-based nationwide coverage if their respective spectrum holdings are limited to local or regional markets. Nonetheless, the country's nationwide carriers are often hesitant to enter into bilateral voice and data roaming agreements at commercially reasonable rates, terms and conditions. Furthermore, these same four nationwide carriers often refrain from offering their own subscribers access to rural roaming coverage on small carriers, including RWA members, even when their own "native" coverage is inferior or non-existent.

Technology constraints restrict carriers with GSM-networks to enter into roaming agreements only with other GSM carriers, and not with CDMA carriers. Similar technological

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<sup>11</sup> *Public Notice* at p. 5.

limitations prevent CDMA carriers from roaming on non-CDMA carriers. This technology restraint has limited the size of an individual carrier's pool of potential roaming partners. It is commonly accepted that LTE is becoming the dominant mobile technology for data services. Eventually, not just data services but all voice services will only be provided using LTE. As all carriers move to LTE, roaming will be possible among all carriers. Many rural-based providers have already begun to inquire about entering into LTE roaming agreements with nationwide providers. However, based on the experiences of RWA members, nationwide providers are less than interested in entering into LTE roaming agreements at commercially reasonable prices. The lack of public announcements of bilateral LTE roaming deals is clear evidence of this.

The inability to roam in rural markets has limited the competitive choice for mobile consumers. Nationwide providers often restrict roaming on rural carrier networks when the nationwide carriers have no coverage of their own available. In these situations, a nationwide provider will suspend its customers' outbound roaming privileges in rural markets despite the fact that the nationwide provider's coverage in those markets is not as extensive as the potential roaming partner's coverage. This means that a nationwide provider's own subscribers do not have access to available networks. While this business practice is legal under the FCC's roaming rules, the behavior and mindset behind it are extremely harmful to hundreds of millions of American consumers who do not get access to rural carriers' networks. Unfortunately, this is the reality today for one of RWA's members providing service in rural Oklahoma. Despite a robust, rural network available for roaming, at least one nationwide provider has prohibited off-network roaming for its customers, despite its own lack of available network in that market. As a result, the nationwide provider's customers have extremely poor service, and in many areas no service at all.

This behavior harms rural-based mobile wireless providers, but more importantly, it creates an environment where public safety is threatened as well. In the event of a natural disaster or debilitating failure (even if just temporary) to one carrier, without bilateral roaming in place, an untold number of mobile users, including front-line public safety users, will be unable to communicate. Requiring bilateral roaming agreements benefits all consumers and ensures that those urban consumers travelling into rural markets have access to mobile broadband coverage when they travel outside their nationwide carrier's service footprint.

Additionally, the lack of bilateral roaming eliminates a source of non-federal revenue that small rural providers can then in turn use to offset network costs. If small, rural-based providers enter into truly bilateral roaming relationships with nationwide providers and the nationwide providers allow their customers the ability to roam on rural-based providers' networks, rural-based providers' finances would greatly improve and that in turn would help limit their need to rely on both state and federal universal service support. Indeed, rural-based providers would have the ability to invest more capital in greater network expansion and modernization to better improve mobile broadband coverage in rural America.

**III. SPECIFIC, PREDICTABLE, AND SUFFICIENT UNIVERSAL SERVICE SUPPORT IS NEEDED TO SUSTAIN AND ADVANCE THE AVAILABILITY OF MOBILE SERVICES IN RURAL AREAS. ANY DECREASE IN OR ELIMINATION OF UNIVERSAL SERVICE SUPPORT WILL HAVE A DETRIMENTAL IMPACT ON MOBILE WIRELESS COMPETITION AND THE OVERALL HEALTH OF THE U.S. MOBILE WIRELESS INDUSTRY.**

For over a decade, universal service support has enabled small, rural-based providers to bring mobile wireless service to the most rural and remote areas of the country. Universal service support is used to maintain and upgrade existing networks, and deploy new mobile wireless service to previously unserved areas. The need for dedicated support for mobile voice

and broadband services remains as critical as ever, and it will persist as wireless networks evolve to 5G mobile technologies.

In spite of the numerous benefits provided to consumers by wireless networks that were built in-part using universal service support, the Commission is poised to radically reduce, and in some cases eliminate, universal service support for mobile wireless carriers.<sup>12</sup> For most if not all small rural-based providers, a substantial loss of universal service support will jeopardize ongoing operations. It will impact the number of operational cell sites and overall coverage because it will force a provider to determine where to cut cost, which includes operating the least-costly cell sites and turning down the most-costly sites.

Over the years, universal service support has enabled small providers to incrementally upgrade their networks, including upgrades to LTE. A substantial loss of universal service funding will prevent many carriers from moving forward with 5G deployment plans. It will also cause them to struggle to maintain existing LTE and legacy CDMA and GSM networks. If a carrier is unable to make network upgrades, it will be unable to compete. Universal service is an ongoing mission, and if the Commission is to truly achieve the goal of nationwide coverage, it must ensure universal service support continues to be made available for mobile services. The Commission's current proposals for Mobility Fund Phase II, if adopted, will have a detrimental impact on the overall health of the mobile wireless industry and will be extremely harmful to the availability of mobile wireless services in rural America.

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<sup>12</sup> See *Connect America Fund et al.*, Report and Order, Declaratory Ruling, Order, Memorandum Opinion and Order, Seventh Order on Reconsideration, and Further Notice of Proposed Rulemaking, WC Docket No. 10-90, *et al.*, FCC 14-54, ¶¶235-257 (rel. June 10, 2014).

#### **IV. SPECTRUM AUCTION POLICY DECISIONS CAN BE USED TO IMPROVE MOBILE WIRELESS COMPETITION.**

One issue that should be examined by the Bureau as it compiles the *Nineteenth Report* is spectrum auction policy. Two recent policy choices show that the Commission can promote mobile wireless competition through the design of spectrum auctions. When designing the forward auction portion of the 600 MHz Broadcast Incentive Auction, the Bureau decided to auction licenses based on Partial Economic Areas (“PEAs”) and award a Rural Service Provider bidding credit to qualifying forward auction applicants. These two spectrum auction policy decisions are already showing favorable results. The Bureau and the Incentive Auction Task Force recently announced that 29 of the 99 applications received for the forward auction portion of the 600 MHz broadcast television spectrum Incentive Auction that were deemed to be complete qualified for the new Rural Service Provider bidding credit.<sup>13</sup> Because of this bidding credit and the PEA-sized licenses up for sale, these rural providers will be competitive in the auction. The FCC should bear this in mind when establishing future auction policy. Mobile wireless competition begins with access to spectrum, and the Commission can ensure a broad range of entities have an opportunity to acquire spectrum through auction design. Accordingly, when designing future spectrum auctions, the FCC should ensure that it uses geographic license sizes that are attractive to small and regional providers. It should also utilize a bidding credit that will encourage auction participation by small rural providers.

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<sup>13</sup> *99 Applications To Participate In The Forward Auction (Auction 1002) Of The Broadcast Television Spectrum Incentive Auction Deemed To Be Complete*, AU Docket No. 14-252, GN Docket No. 12-268, WT Docket No. 12-269, Public Notice, DA 16-503, Attachment A (May 12, 2016).



Respectfully submitted,

**RURAL WIRELESS ASSOCIATION, INC.**

By: */s/ Caressa D. Bennet*

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Caressa D. Bennet, General Counsel  
Daryl A. Zakov, Asst. General Counsel  
Anthony K. Veach, Sr. Regulatory Counsel  
P.O. Box 50551  
Arlington, VA 22205-5551  
(202) 551-0010

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