

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Inquiry Concerning Deployment of Advanced	)	GN Docket No. 17-199
Telecommunications Capability to All	)	
Americans in a Reasonable and Timely	)	
Fashion	)	

To: The Commission

**COMMENTS OF MIMOSA NETWORKS, INC.**

Mimosa Networks, Inc. (“Mimosa”) hereby submits its Comments in response to the above-captioned *Section 706 Notice of Inquiry*.<sup>1</sup> Mimosa is a leading provider of fixed wireless solutions that enable service providers to connect hard-to-reach rural homes and businesses at a fraction of the cost of fiber-to-the-premises solutions. Mimosa is also co-chair of the Broadband Access Coalition (“BAC”) which has filed a Petition for Rulemaking (“Petition”) seeking to add a new, licensed, point-to-multipoint (“P2MP”) fixed wireless service in the underutilized 3700 – 4200 MHz band.<sup>2</sup> The licensing scheme and operating rules proposed in the Petition will enable gigabit and near-gigabit broadband service in rural and underserved areas.

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<sup>1</sup> *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Thirteenth Section 706 Report Notice of Inquiry, FCC 17-109, rel. Aug. 8, 2017 (“*Section 706 NOI*” or “*NOI*”).

<sup>2</sup> The Petition for Rulemaking is being considered in RM-11791, *Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission’s Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3700 – 4200 MHz Band*. See *Public Notice*, RM-11791, Report No. 3080 (rel. July 7, 2017). Comments in response to the Petition were filed on August 7, 2017 and Reply Comments were filed on August 22, 2017.

## **I. Summary**

Section 706 of the Telecommunications Act of 1996, as amended, requires the Commission to determine and report annually on “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.” In its *NOI*, the Commission seeks comment on a broad range of questions regarding “the appropriate metrics and benchmarks by which to measure the deployment of both fixed and mobile service in order to evaluate the extent to which American consumers have access to advanced telecommunications capability.”<sup>3</sup> The Commission also seeks comment on what actions it can take to accelerate the deployment of advanced telecommunications capability.<sup>4</sup>

In its Comments, Mimosa addresses two specific issues. First, Mimosa provides empirical evidence that mobile broadband is not a substitute for fixed broadband service. Second, Mimosa explains why expeditious adoption of the rules proposed in the Petition filed by BAC is a specific action that the Commission can, and should, take to significantly accelerate the deployment of advanced telecommunications capability. The proposed rules would authorize and facilitate a new, licensed, fixed wireless P2MP high-speed broadband service in the 3700 – 4200 MHz band able to provide gigabit or near-gigabit service to rural and underserved areas.

## **II. Mobile Broadband Is Not A Substitute For Fixed Broadband**

The Commission asks a variety of questions regarding the role of mobile broadband and fixed broadband in providing “advanced telecommunications capability.” Specifically, the Commission asks “whether [it] should evaluate the deployment of fixed and mobile broadband

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<sup>3</sup> *NOI* at ¶ 4.

<sup>4</sup> *Id.* at ¶¶ 46 – 50.

as separate and distinct ways to achieve advanced telecommunications capability.”<sup>5</sup> Similarly, the Commission asks “whether *some form* of advanced telecommunications capability, be it fixed *or* mobile, is being deployed to all Americans in a reasonable and timely fashion.”<sup>6</sup> On its face, and in the context of other questions raised in the *NOI*, it is unclear whether the Commission is suggesting that mobile broadband could or should be considered as a *substitute* for fixed broadband.

Mimosa emphasizes that mobile broadband is not, and should not be considered, a substitute for fixed broadband. Rather, mobile broadband is a complement to fixed broadband. Compared to fixed broadband, mobile broadband offers much lower throughput (data rates), lacks the same level of service reliability, imposes much lower monthly data caps (whether soft or hard caps), and costs 14 – 37 times more per gigabyte (“GB”). The Commission itself recognizes the distinct differences between mobile broadband and fixed broadband:

Given the salient differences in fixed and mobile advanced telecommunications capability, as well as the data available for this Inquiry, we believe recognizing a distinction between these two technologies ... is appropriate.<sup>7</sup>

Likewise, the Commission notes that “mobile and fixed broadband have different technical characteristics and limitations ....”<sup>8</sup>

A recent research note by telecom analyst Craig Moffett confirms Mimosa’s conclusion that mobile broadband is not a substitute for fixed broadband.<sup>9</sup> According to Moffett:

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<sup>5</sup> *Id.* at ¶ 9.

<sup>6</sup> *Id.* at ¶ 9 (emphasis in original).

<sup>7</sup> *Id.* at ¶ 5.

<sup>8</sup> *Id.* at ¶ 10.

<sup>9</sup> Moffett’s research note was cited in several on-line industry trade press reports, including Karl Bode, DSLReports, *Unlimited Wireless No Threat to Fixed ISPs (Yet)*, *Analyst Says*, April 17, 2017,

We conclude that the risk of wireless substitution from the wireless industry's new unlimited LTE data plans is lower than intuition might suggest. The compromises one would have to make in order to go "wireless only" simply aren't economically compelling.<sup>10</sup>

The article further reports that:

Moffett claims that just 6 to 7% of consumers are currently wireless broadband only, and that number hasn't changed in several years. Why? Slower speeds, less reliability and lower costs from usage caps.<sup>11</sup>

Moffett continues:

It's not hard to understand why. Cellular broadband typically offers lower speeds and weaker reliability than its wireline counterparts. More importantly, most wireless customers have been on metered data plans which penalize overages with heavy fees and/or dramatically reduced data speeds.<sup>12</sup>

In the discussion below, Mimosa provides empirical data highlighting the substantial differences between mobile and fixed broadband.

### **A. Throughput**

Fixed broadband service offers higher speeds – typically much higher speeds -- than mobile broadband service. And the Commission fully recognizes this. In its *2015 Broadband Progress Report*, the Commission established a benchmark speed of 25/3 Mbps for fixed broadband service.<sup>13</sup> Now, over two and half years later, the Commission is asking whether it is

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<http://www.dslreports.com/shownews/Unlimited-Wireless-No-Threat-to-Fixed-ISPs-Yet-Analyst-Says-139362>. Moffett is an analyst for Moffett Nathanson.

<sup>10</sup> *Id.* Moffett continued: "Yet. Still, it is reasonable to expect at least some substitution around the edges from light users."

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

<sup>13</sup> See Section 706 NOI at n. 33, citing *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act* ("2015 Broadband Progress Report"), 30 FCC Rcd

appropriate to establish a benchmark speed of 10/1 Mbps for mobile broadband, recognizing that “any speed benchmark we set would be lower than the 25 Mbps/3 Mbps benchmark adopted for fixed broadband service, *given the differing capabilities of mobile broadband*.”<sup>14</sup> The Commission also recognizes that the fixed broadband industry continues to increase the data rates offered, noting the deployment of 1 gigabit connections by many carriers.<sup>15</sup>

The much higher speeds offered by fixed broadband providers offer many advantages to consumers. Rapid downloads of massive files, including updates to widely used software, are possible. Households using multiple devices for streaming high-quality video can do so simultaneously. Small businesses and persons working from home can download, and importantly upload, large files very quickly. Even downloads of software updates to mobile devices, including iPhones, are much faster using fixed broadband (and WiFi) rather than the mobile network.

## **B. Monthly Data Caps**

Mobile broadband providers impose much lower monthly data caps than fixed wireless providers. Although all of the major national wireless carriers now offer “unlimited” data usage without overage charges, the Commission notes correctly that “each have a ‘soft cap’ that, when reached, can cause data to be deprioritized during times of congestion. Video resolution may also be lowered by default under the plans” – and that resolution is lowered in some cases for all

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1375 (2015). The Commission retained the 25/3 Mbps benchmark in its *2016 Broadband Progress Report*, 31 FCC Rcd 699 (2016).

<sup>14</sup> *Id.* at ¶¶ 18 – 19 (emphasis added).

<sup>15</sup> *Id.* at ¶ 8.

video, not just video after the “soft cap” is reached.<sup>16</sup> These “soft caps” are imposed when monthly data usage exceeds 10 – 32 MB, depending on the provider.<sup>17</sup> Some mobile carriers impose even lower data caps on tethered usage.<sup>18</sup> And Verizon, the largest mobile carrier, has recently confirmed that it is disconnecting 8,500 customers in rural areas, including customers on “unlimited” plans, due to excessive data usage.<sup>19</sup>

By contrast, fixed broadband providers often have no data caps whatsoever, although some providers have data caps ranging from 100 – 1000 MB per month.<sup>20</sup> Fixed broadband providers do not reduce video resolution. And fixed broadband providers do not impose lower data caps on tethered usage – which is important to the 71% of broadband homes with WiFi.<sup>21</sup>

The mobile broadband data caps are far below the level of usage demanded by broadband customers. For example, iGR estimated in September 2016, one year ago, that average monthly

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<sup>16</sup> *Id.* at n. 10.

<sup>17</sup> *Id.*

<sup>18</sup> Verizon imposes a “soft” cap of 10 GB per month for tethered usage; after the limit is reached, throughput is reduced to 600 kbps regardless of whether there is network congestion. See <https://www.rvmobileinternet.com/alert-verizon-now-enforcing-10gb-hotspot-limit-with-new-unlimited-plan/>, last visited Sept. 18, 2017.

<sup>19</sup> See Chris Mills, BGR, *Verizon is disconnecting 8,500 customers who need its service the most*, Sept. 15, 2017, <http://bgr.com/2017/09/15/verizon-unlimited-plan-reviews-throttling-problems-2017/>.

<sup>20</sup> Verizon FiOS has no data usage cap. See <http://www.verizon.com/about/terms-conditions/network-management-guide> (“There are no usage caps applicable to Verizon Online's Internet access services”), last visited Sept. 18, 2017. Comcast’s Xfinity service has a 1 TB monthly usage cap. <https://dataplan.xfinity.com/faq/>, last visited Sept. 18, 2017. AT&T wireline U-Verse service has a usage cap ranging from 300 MB to 1 TB per month. See <https://arstechnica.com/information-technology/2016/03/att-boosts-data-caps-for-home-internet-and-steps-up-enforcement/>.

<sup>21</sup> Andrew Burger, *Parks Finds 71 Percent of Broadband Households With Wi-Fi or Apple Airport*, Telecompetitor, Jan. 10, 2017, <http://www.telecompetitor.com/parks-finds-71-percent-of-broadband-households-with-wi-fi-or-apple-airport/>.

fixed broadband usage was 190 GB monthly per household.<sup>22</sup> iGR reported that more than 95% of this traffic is video.<sup>23</sup> Furthermore, iGR “forecasts average monthly broadband usage to increase substantially moving forward”, driven in part by greater use of higher-definition video.<sup>24</sup> Similarly, Comcast reported that as of June 2017, Xfinity customer’s median monthly data usage was 100 GB during the past six months.<sup>25</sup>

Low monthly data caps result in consumers limiting usage of their mobile phones. The utility of mobile broadband for small businesses and persons working at home is sharply reduced by these data caps. Consumers on family plans must be particularly careful regarding their data usage so as not to exceed the monthly data cap. Using a mobile phone for WiFi is even more sharply limited because of the limits on tethered data usage. If mobile broadband were truly a substitute for fixed broadband, consumers would not need to switch their mobile devices to WiFi (connected to a fixed broadband network) whenever possible to avoid exceeding their monthly data caps and to obtain higher throughput.

### **C. Reliability**

Mobile broadband is inherently less reliable than fixed devices, even when mobile devices are stationary. In geographic areas with high populations, and especially in areas with

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<sup>22</sup> See Joan Engebretson, Telecompetitor, Sept. 26, 2016, <http://www.telecompetitor.com/igr-average-monthly-broadband-usage-is-190-gigabytes-monthly-per-household/>, citing to a subscription-only report from iGR Research, [https://igr-inc.com/advisory-subscription-services/wireless-mobile-landscape/us\\_home\\_broadband\\_wifi\\_forecast\\_2020.asp](https://igr-inc.com/advisory-subscription-services/wireless-mobile-landscape/us_home_broadband_wifi_forecast_2020.asp).

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> <https://www.xfinity.com/support/internet/data-usage-average-network-usage/>, last visited Sept. 1, 2017. Mimosa would expect average usage to exceed median usage, because heavy users tend to skew the average upward. Nonetheless, even the median usage is far in excess of the data caps imposed by mobile broadband providers.

high peak usage (*e.g.* during rush hour), the mobile broadband network must manage traffic congestion by reducing throughput. By contrast, fixed services can be designed and operated based on predictable and stable household density and usage patterns. The inherent variability in data rates offered by mobile broadband networks makes the service less useful for small businesses and persons working at home who rely on their broadband connection. The Commission itself has recognized that “mobile broadband networks lack the capacity or consistency of service to support most bandwidth intensive uses, such as full-screen HD streaming, on-line gaming, and video conferencing applications.”<sup>26</sup>

#### **D. Cost per GB**

Consumers pay much higher rates per GB of mobile broadband data compared to fixed broadband data. Fierce Wireless reports that on a data allotment basis, mobile broadband costs 37x compared with fixed broadband.<sup>27</sup> On a usage basis, Fierce Wireless reports that mobile broadband costs 14x compared with fixed broadband.<sup>28</sup> And these are the multiples calculated after the introduction of “unlimited” data plans by the major wireless carriers. In 2016, Fierce Wireless reported that the premium for mobile broadband was 20x based on actual usage and 60x based on data allotments.<sup>29</sup>

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<sup>26</sup> Section 706 NOI at n. 38, citing 2016 Broadband Progress Report.

<sup>27</sup> Kyung Mun, Fierce Wireless, Aug. 15, 2017, <http://www.fiercewireless.com/wireless/industry-voices-mun-mobile-pricing-drops-from-9-gb-to-1-80-gb-just-1-year>.

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*



### **III. Authorization Of Point-To-Multipoint Fixed Wireless Broadband In The 3700 – 4200 MHz Band Will Accelerate The Deployment Of Advanced Telecommunications Capability**

In its *Section 706 NOI*, the Commission seeks comment on what actions it can take to accelerate the deployment of advanced telecommunications capability.<sup>30</sup> Mimosa submits that expeditious adoption of the rules proposed in the Petition filed by BAC would significantly accelerate the deployment of advanced telecommunications capability. The proposed rules would amend and modernize Parts 25 and 101 of the Commission's Rules to authorize and facilitate a new, licensed, fixed wireless P2MP high-speed broadband service in the 3700 – 4200 MHz band able to provide gigabit or near-gigabit service to rural and underserved areas.

For the reasons set forth in the Petition, the 3700 – 4200 MHz band can be made available for shared, licensed P2MP broadband deployment rapidly and simply. Not only can the rules be amended in short order, but intensive P2MP use can begin very soon after the rules are effective. Development of equipment will benefit from equipment being used in the adjacent 3650 - 3700 MHz band. The existing Part 101 frequency coordination processes can easily incorporate the addition of P2MP. Although a new service will be authorized, the fundamental aspects of the equipment and technology ecosystem and frequency coordination structures are already in place.

Fixed wireless technology is an efficient and cost-effective way for consumers to receive broadband services in their homes and at their businesses and community anchor institutions, including schools, libraries and medical facilities. Fixed wireless networks can be deployed at 25 percent or less of the capital expense of an all-fiber network, while offering comparable

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<sup>30</sup> *Section 706 NOI* at ¶¶ 46 – 50.

reliability and speeds. Fixed wireless networks can be deployed quickly and are easily scalable, such that private capital can be invested in stages over time without significant upfront capital investment. Last-mile wireless connectivity is essential for the cost-effective deployment of new broadband Internet access services. Fixed wireless technology remains the most cost-effective means to deliver fixed broadband services to consumers in rural areas where sparse population density prohibits ubiquitous wireline deployment.

#### **IV. Conclusion**

Mimosa urges the Commission to conclude that mobile broadband is not a substitute for fixed broadband. Further, Mimosa submits that making the 3700 – 4200 MHz band available for point-to-multipoint fixed wireless broadband services will markedly improve the availability of high-throughput broadband service to rural and underserved areas.

Respectfully submitted,

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