

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

In the Matter of )  
 )  
Expanding Flexible Use of the ) GN Docket No. 18-122  
3.7 to 4.2 GHz Band )

To: The Commission

**COMMENTS OF THE BROADBAND CONNECTS AMERICA COALITION**

**Center for Rural Strategies, South Carolina Office of Rural Health,  
Tribal Digital Village Network, Akaku Maui Community Media,  
South Central Alabama Broadband Cooperative District,  
Maine Broadband Coalition, Access Humboldt,  
School Health & Libraries Broadband (SHLB) Coalition,  
Citizens Connectivity Committee, American Library Association,  
Next Century Cities, Public Knowledge,  
Open Technology Institute at New America,  
Benton Foundation, xLab**

*October 29, 2018*

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The Broadband Connects America coalition (“BCA” or “Coalition”) hereby submits these comments in response to the Commission’s Notice of Proposed Rulemaking (“NPRM”) in the above-captioned proceedings.<sup>1</sup>

**I. Introduction & Summary**

The Broadband Connects America coalition strongly agrees with the Commission’s proposal to open unused spectrum in the 3.7-4.2 GHz band for a licensed, point-to-multipoint (P2MP) fixed wireless service that empowers providers to extend high-speed broadband to rural, tribal, small town and other underserved areas. The Commission’s proposal to authorize coordinated, shared use of the 3.7 GHz band can achieve a win-win-win trifecta of critical public policy goals: first, to enable fixed wireless providers to bring high-speed broadband access to rural areas; second, to reallocate a substantial portion of the band for mobile 5G networks; and third, to protect incumbent Fixed Satellite Services (FSS) licensees from undue disruption or harmful interference.

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<sup>1</sup> Notice of Proposed Rulemaking, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band, Order and Notice of Proposed Rulemaking*, GN Docket No. 18-122, FCC 18-91 (rel. July 13, 2018) (“NPRM”).

The Commission should allow P2MP providers to coordinate shared use across the upper 300 megahertz of the band (3880-4200 MHz), on a first-in licensed basis. In addition, the Commission should authorize opportunistic access (e.g., license by rule) to any vacant frequencies in the lower portion of the band until such time as future “flexible use” licensees notify the Commission or a frequency coordinator that they are deployed and ready to commence service in a local area. Unlocking every megahertz of the grossly underutilized C-band can help to remedy America’s digital connectivity divide and serve as part of the foundation for a more inclusive and robust 5G wireless ecosystem.

High-speed broadband is increasingly central to most Americans as the gateway to education, employment services, entertainment, news, communication, health and financial services, as well as for e-commerce in the broader economy. However, rural Americans disproportionately lack access to high-speed broadband compared to people living in urban and suburban areas. The Commission’s data shows a staggering divide—one that leaves nearly a third of rural Americans with no access to high-speed broadband. That data, alarming as it is, understates just how many rural Americans lack access to high-speed broadband services. Studies also show that rural Americans enjoy far less choice and competition in the broadband marketplace. They pay more for worse service than those who live in urban and suburban areas. Both of these gaps – connectivity and competitive choice – are likely to worsen if emerging 5G technologies are deployed only in more densely-populated and higher-revenue areas.

This high-speed broadband gap imposes distinct social and economic harms on small town and rural communities. The divide harms educational attainment, deepening the “homework gap” between students in rural areas and those in urban and suburban areas. Studies

suggest that poor or nonexistent broadband access in rural areas has played a central role in the trend of young Americans in particular to move away from rural and small town areas.

Conversely, the introduction of high-speed broadband in rural areas and smaller towns has been shown to boost economic prosperity. Studies show that high-speed and affordable broadband networks can improve local economies as well as the broader U.S. economy, enabling more business creation and better jobs. High-speed broadband is also increasingly integral to efficient and high-productivity farming. Modern-day agriculture is reliant on high-speed broadband, and bringing improved access to rural areas is critical to precision farming.

The Commission should address this digital divide by expeditiously moving to make unused spectrum capacity across the entire 3.7-4.2 GHz band available to providers ready to deploy fixed wireless broadband in underserved and high-cost areas. By authorizing coordinated, shared access to the 3.7 GHz band, the Commission can make available public ‘spectrum as infrastructure,’ at no cost to taxpayers, to enable high-speed broadband to rural and other areas that are currently unserved or plagued by poor service. P2MP fixed wireless can bring high-speed services to rural areas at a much lower cost than trenching fiber, reducing costs for providers and prices for consumers. The Commission should rapidly authorize the coordinated sharing of all unused spectrum capacity in the 3.7-4.2 band for a new, licensed, point-to-multipoint (P2MP) fixed wireless service targeted at unserved and hard-to-serve areas.

Finally, the Commission can facilitate sharing within the band by authorizing an automated frequency coordination system that ensures no harmful interference for incumbent fixed satellite services, as well as the enforcement of temporary, opportunistic access to the lower portion of the band cleared for “flexible use” licensing until such time as mobile carriers actually deploy and commence service in rural and tribal communities.

## II. The Digital Divide Distinctly Harms Rural Americans

The Commission recognizes that “many communities still lack access to meaningful broadband connectivity.”<sup>2</sup> Rural Americans in particular do not have the same opportunities as people living in urban and suburban areas when it comes to high-speed broadband access. People living in rural areas are far more likely to have no provider at all. Even when there is an option for high-speed broadband, rural Americans are far less likely to enjoy the benefits of choice and competition among providers. As a result, many less-densely-populated areas suffer from poor service and high costs. This lack of high-speed broadband reduces economic opportunity and plays a major role in the ongoing migration of people and businesses from rural and other underserved areas. Many low-income areas, even within urbanized areas, face these same disadvantages.

Chairman Ajit Pai has correctly described this reality and has even stated that “closing the digital divide” is his “top policy priority as FCC Chairman.”<sup>3</sup>

If you live in rural America, you are much less likely to have high-speed Internet service than if you live in a city. If you live in a low-income neighborhood, you are less likely to have high-speed Internet access than if you live in a wealthier area. The digital divide in our country is real and persistent.<sup>4</sup>

### A. *Rural Americans Disproportionately Lack Access to High-Speed Broadband*

Rural areas of the United States lack access to high-speed broadband at much higher rates than urban and suburban areas. Rural Americans also have fewer options for high-speed

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<sup>2</sup> *Id.* at ¶ 3.

<sup>3</sup> “Remarks of FCC Chairman Ajit Pai at the Fourth Meeting of the Federal Communications Commission’s Broadband Deployment Advisory Committee” (Jan. 23, 2018), at 1. *See also* Remarks of FCC Chairman Ajit Pai at the Farm Foundation/U.S. Department of Agriculture Summit, April 18, 2018, at 1 (“On my first day as FCC Chairman in January 2017, I said that my number one priority was closing the digital divide and bringing the benefits of the Internet age to all Americans.”).

<sup>4</sup> Remarks of FCC Chairman Ajit Pai at the American Enterprise Institute, *The First 100 Days: Bringing the Benefits of the Digital Age to All Americans* (May 5, 2017), at 2.

broadband providers, and due to the high cost of deploying broadband to hard-to-serve areas, rural consumers typically pay more for worse service compared to Americans in urban areas.

Rural Americans disproportionately lack *any access at all* to broadband that meets the Commission's modest benchmark of 25 megabits/second downlink and 3 megabits/second up. The Commission's most recent *Broadband Deployment Report* (2018) found that only 69.3 percent of the population in rural areas live in a census tract where an internet service provider has deployed any fixed terrestrial service meeting the 25/3 Mbps standard, compared to 97.9% of the population in urban areas.<sup>5</sup> Overall, more than 24 million Americans lack access to fixed terrestrial broadband at 25/3 Mbps.<sup>6</sup> As of December 2016, 16.1 percent of rural Americans lacked access to fixed terrestrial broadband service even at 10/1 Mbps.<sup>7</sup> Further, the Commission's data showing that the reported 30 percent of rural Americans who live in a census tract lacking high-speed broadband substantially understates the percentage of rural Americans who lack access, since ISPs report a census tract as fully covered so long as they serve any households at all.<sup>8</sup>

These low rates of high-speed broadband access in rural areas are reflected broadly in research. Other studies, such as one released in September 2018 by the Pew Research Center, found that only 58 percent of rural Americans said they subscribe to home broadband, compared to 67 percent of urban Americans and 70 percent of suburban Americans.<sup>9</sup> According to one

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<sup>5</sup> 2018 Broadband Deployment Report, ("2018 Broadband Deployment Report"), GN Docket No. 17-199 (Feb. 2, 2018), ¶ 50, Table 1.

<sup>6</sup> 2016 Broadband Progress Report, ("2016 Broadband Progress Report"), 31 FCC Rcd 699 (Jan. 28, 2016), [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-16-6A1](https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-6A1) at ¶ 50.

<sup>7</sup> *Ibid.*, 738, n.261.

<sup>8</sup> *Ibid.* (the average land area of census tracts without 25/3 Mbps access is 84.8 square miles compared to 5.9 square miles for census tracts with access).

<sup>9</sup> Monica Anderson, "About a quarter of rural Americans say access to high-speed internet is a major problem," *Pew Research Center*, (Sep. 10, 2018), <http://www.pewresearch.org/fact->

survey, 22 percent of all Americans who reported that they do not use the internet live in rural areas.<sup>10</sup>

While rural and other households lacking basic broadband service is the core problem, the digital divide is further exacerbated by a widespread lack of choice and price competition in rural areas compared to urban areas. While the 2018 *Broadband Deployment Report* did not include statistics on the number of providers available to rural Americans, the Commission's 2016 *Broadband Progress Report* did, and it showed that competition is woefully lacking in rural areas. Just 13 percent of Americans living in rural areas have more than one broadband provider, while 48 percent only have one provider, and 39 percent have none.<sup>11</sup> Indeed, the choice and competition gap for that high-speed fixed broadband service afflicts small town, exurban and even some urban communities. Only 42 percent of developed census blocks in the U.S. have access to more than one provider offering fixed broadband speeds of at least 25/3 Mbps. And when it comes to fixed broadband speeds of at least 100 /10 Mbps, which is increasingly available from wireline providers, only 12 percent of developed census blocks in the U.S. have access to more than one such provider.<sup>12</sup>

Further, FCC survey data understates precisely how many rural Americans lack access to high-speed broadband. The data comes from Form 477, which the Commission itself has

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tank/2018/09/10/about-a-quarter-of-rural-americans-say-access-to-high-speed-internet-is-a-major-problem/.

<sup>10</sup> Monica Anderson, *et al.*, "11% of Americans don't use the internet. Who are they?," *Pew Research Center*, (March 5, 2018), <http://www.pewresearch.org/fact-tank/2018/03/05/some-americans-dont-use-the-internet-who-are-they/>.

<sup>11</sup> 2016 *Broadband Progress Report*, ¶ 86, Table 6

<sup>12</sup> See "Internet Access Services: Status as of June 30, 2016," Industry Analysis and Technology Division, Wireline Competition Bureau (April 2017), at Fig. 4. Figure 4 shows that 58 percent of developed census blocks have access to one or fewer service providers offering broadband speeds of 25/3 Mbps and 88 percent of developed census blocks have access to one or fewer service providers offering broadband speeds of 100/10 Mbps. Further, Figure 4 *overstates* the level of competition because "a provider that reports offering service in a particular census block may not offer service, or service at that speed, to all locations in the census block." *Id.* at 6.



acknowledged could overstate the availability of broadband in any given area.<sup>13</sup> The inaccuracies of Form 477 data stems from the fact that internet service providers are only required to serve a single location in a census tract to declare they have “deployed” in that area. Moreover, ISPs only need to report the speeds that they could feasibly provide, not the service consumers actually receive. These caveats can lead to particularly drastic overstated deployment figures in rural areas, where the census tracts tend to be larger.<sup>14</sup> Local residents and officials know the rural divide is wider than this data suggests. For example, the chairman of the West Virginia state broadband council said the Commission’s 2018 figures on how many people in the state had broadband access were “not even close to being correct.”<sup>15</sup>

Even where broadband is available, rural communities often pay higher prices for lower quality service, despite earning less on average than Americans living in urban areas.<sup>16</sup> One of the biggest barriers to broadband adoption across the United States, as identified by several studies, is cost.<sup>17</sup> Only 53 percent of Americans surveyed by the Pew Research Center who make less than \$30,000 annually had broadband at home, compared to 87 percent of those who make

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<sup>13</sup> Federal Communications Commission, “Fixed Broadband Deployment Data from Form 477,” <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477> (“A provider reports deployment of a particular technology and bandwidth in a census block may not necessarily offer that service everywhere in the block. Accordingly, a list of providers deployed in a census block does not necessarily reflect the number of choices available to any particular household or business location in that block, and the number of such providers in the census block does not purpose to measure competition”).

<sup>14</sup> Max Garland, “WV broadband council chairman blasts FCC report, says data isn't correct,” *Charleston GazetteMail* (Feb. 8, 2018), [www.wvgazettemail.com/business/wv-broadband-council-chairman-blasts-fcc-report-saysdata-isn/article\\_d98cf35b-e9ac-5f82-93a9-b214770656db.html](http://www.wvgazettemail.com/business/wv-broadband-council-chairman-blasts-fcc-report-saysdata-isn/article_d98cf35b-e9ac-5f82-93a9-b214770656db.html) (“In an email, an FCC spokesman said this criteria could ‘somewhat overstate deployment,’ adding that census blocks are typically larger in rural areas.”).

<sup>15</sup> *Ibid.*

<sup>16</sup> Sharon Stover, “Reaching rural America with broadband internet service,” *PhysOrg* (Jan. 17, 2018), <https://phys.org/news/2018-01-rural-america-broadband-internet.html#jCp>.

<sup>17</sup> “Research Shows Cost is Biggest Barrier to Broadband Adoption,” *Benton* (Jan. 11, 2016), <https://www.benton.org/blog/research-shows-cost-biggest-barrier-broadband-adoption>; National Telecommunications and Information Administration, “Exploring the Digital Nation: Computer and Internet Use at Home” (2011); Federal Communications Commission, “93 Million Americans Disconnected from Broadband Opportunities,” News Release (Feb. 23, 2010).

between \$30,000 and \$100,000 a year.<sup>18</sup> Even rural Americans lucky enough to live in an area with *any* option for high-speed broadband might be priced out of being able to buy access and use it for work, education, and entertainment, among other necessary activities such as financial and health services. As Chairman Pai observed last year: “In urban areas 98% of Americans have access to high-speed fixed service. In rural areas, it’s only 72%. 93% of Americans earning more than \$75,000 have home broadband service, compared to only 53% of those making less than \$30,000.”<sup>19</sup>

The “homework gap” that separates students with connectivity and those without it also disproportionately impacts rural children. The Commission’s E-Rate program has been found to have made great strides in connecting schools and libraries since its 2014 modernization, yet rural schools are still struggling to gain access to high-speed broadband.<sup>20</sup> According to the nonprofit EducationSuperHighway, 6.5 million students remain unconnected at school and 77 percent of those students live in rural areas.<sup>21</sup> The same study found that schools from rural and small towns make up 3/4 of the schools without fiber.<sup>22</sup> Similarly, the Department of Education reported that 71 percent of students aged 5-to-17 years old in rural areas have fixed broadband, compared to 84 percent of students in the same age bracket in suburbs, and 74 percent of students in cities.<sup>23</sup> High-speed broadband access at school and a local library is crucial for students to complete homework assignments and conduct research for a project or individual

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<sup>18</sup> Monica Anderson, “Digital divide persists even as lower-income Americans make gains in tech adoption,” The Pew Research Center, (March 22, 2017), <http://www.pewresearch.org/fact-tank/2017/03/22/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/>.

<sup>19</sup> Remarks of FCC Chairman Ajit Pai at “Broadband for All” Seminar, Stockholm, Sweden (June 26, 2017), at 1.

<sup>20</sup> E-rate Progress Report, Wireline Competition Bureau and Wireless Telecommunications Bureau staff (Jan. 18, 2017), <https://www.fcc.gov/document/e-rate-progress-report>.

<sup>21</sup> EducationSuperHighway, “2017 State of the States” (2017), [https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/educationsuperhighway\\_2017\\_state\\_of\\_the\\_states.pdf](https://s3-us-west-1.amazonaws.com/esh-sots-pdfs/educationsuperhighway_2017_state_of_the_states.pdf).

<sup>22</sup> *Ibid.*

<sup>23</sup> “Student Access to Digital Learning Resources Outside of the Classroom,” U.S. Department of Education, (April 2018), Figure 11.1, page 65, <https://nces.ed.gov/pubs2017/2017098.pdf>.

research on a topic of interest. An estimated 70 percent of teachers across the U.S. assign homework that requires access to the internet, which makes this homework gap even more stark in areas lacking any high-speed broadband, particularly since even if homework does not *require* internet access, high-speed broadband has a distinct power to augment a student’s ability to conduct efficient and thorough research.<sup>24</sup>

### ***B. Lack of High-Speed Broadband Access Imposes Significant Harms in Rural Areas***

The lack of high-speed broadband access in rural areas has far-reaching and negative ramifications for these communities, both economically and socially. A recent Pew Research Center survey reported that 24 percent of rural Americans said that access to high-speed broadband (or rather, a lack thereof) is a “major problem” in their local community, compared to only 9 percent of suburban Americans and 13 percent of urban Americans.<sup>25</sup>

One harm imposed by this digital divide is reflected in the broader trend of people, and young people in particular, moving away from rural areas in part due to the lack of internet access that hurts education, business, and employment.<sup>26</sup> A *Vice Motherboard* reporter described the situation in Marlinton, West Virginia, where not one household outside of a local ski resort has access to high-speed broadband. That lack of access, the reporter notes, makes it

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<sup>24</sup> Sean Cavanagh, “Students’ Lack of Home Internet Access Becomes Priority for District Tech Leaders,” *EdWeek Market Brief* (Feb. 19, 2016), <https://marketbrief.edweek.org/marketplace-k-12/lack-of-out-of-school-web-connections-major-focus-of-district-tech-leaders/>.

<sup>25</sup> Monica Anderson, “About a quarter of rural Americans say access to high-speed internet is a major problem,” *Pew Research Center* (Sep. 10, 2018), <http://www.pewresearch.org/fact-tank/2018/09/10/about-a-quarter-of-rural-americans-say-access-to-high-speed-internet-is-a-major-problem/>.

<sup>26</sup> Kaleigh Rogers, “What It’s Like to Live in America Without Broadband Internet,” *Vice Motherboard* (April 16, 2018), [https://motherboard.vice.com/en\\_us/article/d35kbj/americans-who-dont-have-internet](https://motherboard.vice.com/en_us/article/d35kbj/americans-who-dont-have-internet) (“A lack of internet is forcing many young people to move away, fleeing their home states altogether to find modern career opportunities. It prevents areas already hard-hit by the demise of other industries, like coal, from finding new ways to make money online or telecommuting. A lack of internet access hurts businesses, hinders education, prevents people from getting jobs, and can even be life-threatening, as emergency services increasingly rely on internet-connected communications and documentation.”).

“more difficult for students to do their homework and access study resources, to preventing new businesses from opening and existing businesses from succeeding.” He described “one local auto shop where employees had to write down customers’ credit card numbers by hand, and then go to a coffee shop with internet at the end of each day to finally make the charges, hoping they hadn’t made any mistakes. That shop had gone out of business by the time I arrived.”<sup>27</sup> One resident of Marlinton lamented the impacts of no broadband access: “It affects so much of the economy in this county and we’re losing so much... I want my kids to stay here, but at this point there’s not much for me to offer them.”<sup>28</sup>

The trend of Americans moving out of rural areas is growing. The Pew Research Center found that between 2000 and 2015, 73 percent of rural counties had more people move away than move in, particularly in the Northeast and Midwest.<sup>29</sup> Further, of the 1,969 rural counties reviewed by the Pew Research Center, there are fewer people employed currently in nearly 1,197 of them compared to 2000.<sup>30</sup> Although other factors contribute to the trend of Americans leaving rural areas, a lack of high-speed broadband and the opportunities and conveniences that come with it cannot be ignored. Notably, one expert discussing this study highlighted that rural areas that have attracted some high-tech industries to their localities have fared better.<sup>31</sup>

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<sup>27</sup> *Ibid.*

<sup>28</sup> *Ibid.*

<sup>29</sup> Stef W. Knight, “Why rural counties are dying in America,” *Axios* (June 20, 2018), <https://www.axios.com/the-dying-rural-counties-of-america-0fbcaa2f-dae5-47e3-99f7-e14693397e2a.html>.

<sup>30</sup> *Ibid.*

<sup>31</sup> *Ibid.* (“Yes, but: Not all non-metropolitan areas are losing all of their young people. ‘Places that have somehow brought some high-tech industries to their boundaries have not done as poorly,’ William Frey of the Brookings Institution tells Axios.”).

### **III. Access to High-Speed Broadband Boosts Economic Prosperity in Rural Areas**

Improving access to affordable high-speed broadband is a key element in any strategy to boost economic prosperity in rural, tribal and small town areas.<sup>32</sup> Americans in rural communities would be able to use high-speed broadband for education, working remotely, and to serve as a foundation for businesses in a variety of sectors. With the growth of the digital economy, American workers in rural areas really cannot afford to be so far behind their urban and suburban counterparts in high-speed broadband adoption, as workers are expected to be well-versed in technology when applying to various jobs.<sup>33</sup> Additionally, with the growing importance of technology-based farming, high-speed broadband is becoming increasingly crucial for agriculture as well.

#### ***A. High-Speed Broadband Is Critical For Boosting Rural Economies***

For rural areas, improving access to high-speed broadband has proved to be a winning formula to stimulate economic activity and build small hubs of business in various communities in the country. A Hudson Institute study found that the rural broadband industry supported 69,595 jobs in 2015 through both “its own employment and the employment that its purchases of

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<sup>32</sup> The Executive Office of the President, “Community-Based Broadband Solutions: The Benefits of Competition and Choice for Community Development and High-Speed Internet Access” (Jan. 2015), [https://obamawhitehouse.archives.gov/sites/default/files/docs/community-based\\_broadband\\_report\\_by\\_executive\\_office\\_of\\_the\\_president.pdf](https://obamawhitehouse.archives.gov/sites/default/files/docs/community-based_broadband_report_by_executive_office_of_the_president.pdf) at 5.

<sup>33</sup> Phil McCausland, “Rural communities see big returns with broadband access, but roadblocks persist,” *NBC News* (June 11, 2018), <https://www.nbcnews.com/news/us-news/rural-communities-see-big-returns-broadband-access-roadblocks-persist-n881731> (“What we know off the bat is that if you don’t have broadband you will be left out,” said Roberto Gallardo, the assistant director of the Purdue Center for Regional Development. “If you do have it, it really is analogous to the installation of a railroad 100 years ago or a highway 50 years ago. Broadband has that same potential to connect communities.”).

goods and services generated.”<sup>34</sup> The same study found that rural broadband supported over \$100 billion in e-commerce the same year, and that \$8.2 billion accrued through the economic activity stimulated by the rural broadband industry went back to rural areas.<sup>35</sup>

Several case studies reflect that high-speed broadband has immense power in developing thriving economies in rural areas and smaller cities. For example, residents of Lake County, Minnesota, an area that is home to around 10,000 people and spans 3,000 square miles near the Canadian border, generally lacked access to high-speed broadband until local leaders invested over \$80 million to address that problem.<sup>36</sup> According to the Blandin Foundation, the improved connectivity in Lake County could catalyze tens of millions of dollars in the long term from household economic benefit and residential real estate value.<sup>37</sup>

Municipal broadband networks have also showcased how high-speed broadband can stimulate a local economy. The municipal power company in Chattanooga, Tennessee, spent roughly \$220 million building its municipal fiber-optic system, which in turn generated over \$865 million in economic growth for the city.<sup>38</sup> According to a report from the University of Tennessee, the Chattanooga municipal broadband network could be directly linked with creating between 2,800 and 5,200 new jobs and that the economic benefits for the city were roughly \$1 billion from the years of 2011-2015.<sup>39</sup> Chattanooga had the third highest wage growth of all

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<sup>34</sup> Hanns Kuttner, “The Economic Impact of Rural Broadband,” *The Hudson Institute* (April 2016), <https://www.frs.org/sites/default/files/documents/2017-12/Hudson%202016%20The%20Economic%20Impact%20of%20Rural%20Broadband.pdf> at 4.

<sup>35</sup> *Ibid.*

<sup>36</sup> Phil McCausland, “Rural communities see big returns with broadband access, but roadblocks persist,” *NBC News*, (June 11, 2018), <https://www.nbcnews.com/news/us-news/rural-communities-see-big-returns-broadband-access-roadblocks-persist-n881731>.

<sup>37</sup> *Ibid.*

<sup>38</sup> Peter Moskowitz, “Chattanooga Was a Typical Postindustrial City. Then It Began Offering Municipal Broadband,” *The Nation* (June 3, 2016), <https://www.thenation.com/article/chattanooga-was-a-typical-post-industrial-city-then-it-began-offering-municipal-broadband/>.

<sup>39</sup> Jason Koebler, “The City That Was Saved by the Internet,” *Vice Motherboard* (Oct. 27, 2016), [https://motherboard.vice.com/en\\_us/article/ezpk77/chattanooga-gigabit-fiber-network](https://motherboard.vice.com/en_us/article/ezpk77/chattanooga-gigabit-fiber-network).

American mid-sized cities in 2014.<sup>40</sup> Chattanooga's unemployment rate has fallen to between 3% and 4% in 2018.<sup>41</sup> Similarly, the city of Lafayette, Louisiana, boosted its economy with the introduction of a high-speed municipal broadband network as well. In just about a year and a half, LUS Fiber network created roughly 2,000 jobs with average salaries of \$60,000.<sup>42</sup>

The cases of Lake County, Chattanooga, and Lafayette reflect the broader reality that high-speed broadband access and availability both directly and indirectly catalyze economic development in localities, as well as improving the broader U.S. economy and improving livelihoods in rural communities. But while public investment in fiber networks are practical in many places, a more widespread and low-cost deployment of high-capacity fixed wireless broadband would be enabled if private sector ISPs had local access to shared mid-band spectrum, as the *NPRM* suggests is possible in the 3.7-4.2 GHz band.

### ***B. High-Speed Broadband Access In Rural Areas Is Critical For Agriculture***

Modern-day, efficient farming relies on high-speed broadband. New tools for tractors, as well as data-driven agricultural techniques, all require reliable, strong, and high-speed broadband access. As Chairman Pai recently tweeted, “#Agriculture and #technology are closely related for many American farms today.”<sup>43</sup> Improving access to high-speed broadband in rural areas, and in particular hard-to-serve areas home to farmlands, is crucial for farmers. A professor from the University of Virginia traveled to rural areas and talked with farmers, most of whom he said

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<sup>40</sup> Jason Koebler, “The City That Was Saved by the Internet,” *Vice Motherboard* (Oct. 27, 2016), [https://motherboard.vice.com/en\\_us/article/ezpk77/chattanooga-gigabit-fiber-network](https://motherboard.vice.com/en_us/article/ezpk77/chattanooga-gigabit-fiber-network).

<sup>41</sup> “Economy at a Glance,” Bureau of Labor Statistics, accessed on Oct. 11, 2018, [https://www.bls.gov/eag/eag.tn\\_chattanooga\\_msa.htm](https://www.bls.gov/eag/eag.tn_chattanooga_msa.htm).

<sup>42</sup> “Transcript: Community Broadband Bits Episode 144,” Community Networks (April 10, 2015), <https://muninetworks.org/content/transcript-community-broadband-bits-episode-144>.

<sup>43</sup> Ajit Pai (@AjitPaiFCC), Twitter (June 21, 2018, 12:29 PM), <https://twitter.com/AjitPaiFCC/status/1009835613690912769>.

were lucky if they had even 2G wireless service, about the importance of broadband to farming. The farmers noted that broadband access could increase the efficiency of their farming by 10 percent.<sup>44</sup> The professor noted that the enormous number of people farmers will need to feed over the next several decades will require the food supply to be multiplied. There is a limited amount of land available for farming that is also arable, which means more efficient farming practices powered by broadband will be necessary.<sup>45</sup>

Precision agriculture and high-speed broadband are inextricably linked. Reliable, high-speed broadband services are required in rural areas to empower real-time sharing of data and communications that serve as the basis for precision agriculture.<sup>46</sup> Deere & Company, the tractor manufacturer, has told the Commission that broadband is essential for agriculture in the modern era. It serves as the foundation to “the economic heart of many American rural communities.”<sup>47</sup>

Deere & Company stated:

As these machine populations continue to grow and our solutions continue to rely on high speed machine connections, our reliance on rural broadband coverage will only increase, and the ability of farmers using Deere’s agricultural equipment and systems to improve efficiency, yield, and smart resource use will depend on their ability to leverage high speed broadband connections capable of enabling real-time M2M and machine to farm (“M2F”) interaction. The “Internet of Things” in rural America will include not only smart meters and smart appliances, but also smart farming equipment and systems needed to drive local economies.<sup>48</sup>

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<sup>44</sup> Whitelaw Reid, “Broadband 'disconnect' has big consequences for midwest farmers,” *PhysOrg* (Oct. 9, 2018), <https://phys.org/news/2018-10-broadband-disconnect-big-consequences-midwest.html#jCp>.

<sup>45</sup> *Ibid.* (“‘If you think about it, we’re going to need to feed 100 million more people in the next 60 years. That means we’re going to have to double our food supply. And by we, I mean farmers,’ Ali said. ‘How do we do this? We’re out of land. So we need to have more efficient farming practices, and communications technologies can help us do that. But none of it is possible without universal broadband – and that’s something policymakers haven’t figured out yet.’”).

<sup>46</sup> Comments of Deere & Company, GN Docket No. 17-199 (Sep. 21, 2017), [https://ecfsapi.fcc.gov/file/109212496527376/FINAL\\_Deere%20Comments%20on%20Section%20706%20NOL.pdf](https://ecfsapi.fcc.gov/file/109212496527376/FINAL_Deere%20Comments%20on%20Section%20706%20NOL.pdf) (“Deere & Company Comments”).

<sup>47</sup> *Ibid.*

<sup>48</sup> *Ibid.*



High-speed broadband is necessary for services integral to farmers such as voice communications and real-time data on the weather and the market. Deere & Company, for example, has noted that its equipment both sends and receives very large field map data files, which requires reliable, high-speed broadband.<sup>49</sup>

#### **IV. The Commission Should Authorize Immediate Shared Use of the 3.7-4.2 GHz Band to Enable High-Capacity Fixed Wireless P2MP Services in Rural Areas**

The Commission seeks comment on making at least the upper segment of the 3.7 GHz band available for adding “more intensive fixed use in the band by permitting point-to-multipoint service as a means to encourage efficient, cost-effective broadband deployment, particularly in rural areas.”<sup>50</sup> The BCA coalition strongly supports the Commission’s proposal to open unused spectrum in the 3.7-4.2 GHz band for a licensed, point-to-multipoint fixed wireless service that empowers providers to extend high-speed broadband to underserved areas. Coordinated, shared use of the ongoing FSS band by fixed wireless providers can make a major difference in bringing connectivity to areas where the business case has been lacking for fiber-to-the-home connections.

Since earth stations are disproportionately clustered around urban areas, there should be ample opportunity for rural ISPs to leverage this underutilized band in rural areas before, during and after any clearing of the bottom portion of the band for auctions and mobile licensing. The Commission should allow P2MP providers to coordinate shared use across the upper 300 megahertz of the band (3900-4200 MHz), on a first-in licensed basis. In addition, the Commission should also authorize opportunistic access (e.g., license by rule) to any vacant

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<sup>49</sup> *Ibid.*

<sup>50</sup> *NPRM* at ¶ 49.

frequencies in the lower portion of the band until such time as future “flexible use” licensees notify the Commission or a frequency coordinator that they are deployed and ready to commence service in a local area. This approach maximizes the public interest benefits of the band, promoting both enhanced rural and mobile connectivity while protecting FSS incumbents from harmful interference.<sup>51</sup> Since the process of automated frequency coordination would be equally effective across the entire 3.7-4.2 GHz band, to leave even a single megahertz vacant in rural areas is a lost opportunity to narrow the digital divide.

***A. The 3.7-4.2 GHz Band is a Unique Opportunity to Address the Rural Digital Divide***

The 3.7 GHz band provides an opportunity for the Commission to provide immediate relief to rural areas that struggle on the wrong side of the digital divide. While there is widespread and important use of the 3.7 GHz band by the Fixed Satellite Service (FSS), most of the band’s 500 megahertz of capacity lies fallow in rural and tribal areas across the country. Deploying high-throughput fixed broadband to rural and small town America does not need to depend entirely on the Connect America Fund and other subsidy programs. By authorizing coordinated and shared use by point-to-multipoint (P2MP) fixed wireless services, the Commission can unlock unused “spectrum as infrastructure”<sup>52</sup> to improve high-speed broadband access in rural areas at no cost to the Treasury. Freeing up the 3.7-4.2 GHz band for coordinated use by fixed wireless providers will help bring higher-speed broadband to rural and unserved

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<sup>51</sup> See Amir Nasr and Michael Calabrese, “WiFu, Coalition Present a ‘Win-Win-Win’ Proposal to Open Mid-Band Spectrum for High-Speed Rural Broadband,” New America’s Open Technology Institute Blog (summarizing and linking to a technical presentation made to the Commission on P2MP, available here: [https://newamericadotorg.s3.amazonaws.com/documents/BAC\\_Google\\_FCC\\_Technical\\_Preso\\_P2MP-FSS\\_Coex\\_FINAL\\_032718\\_1.pdf](https://newamericadotorg.s3.amazonaws.com/documents/BAC_Google_FCC_Technical_Preso_P2MP-FSS_Coex_FINAL_032718_1.pdf)).

<sup>52</sup> See Doug Brake, “*A Policymaker’s Guide to Rural Broadband Infrastructure*,” Information Technology & Innovation Foundation (April 2017) at 7 (“Spectrum is in a sense a type of infrastructure: Congressional desire to expand broadband deployment should include efforts to provide additional spectrum for commercial uses through a variety of license types.”).

areas sooner and at a much more affordable cost to providers and, ultimately, to consumers, small businesses and community anchor institutions. This increased connectivity will boost private sector investment in rural communities, which in turn will generate opportunity and greater economic activity.

Fixed wireless offers a much more cost-effective way of bringing high-speed broadband to targeted areas than laying fiber. According to a 2017 study published by the Carmel Group, fixed wireless broadband access can be deployed at one-seventh the capital expense of [fiber-to-the-home] and about one-fourth the capital expense of cable broadband.<sup>53</sup> Putting this mid-band spectrum to use for P2MP will lower deployment costs for all providers and make more efficient use of public subsidies through programs, including the Connect America Fund.

Our groups specifically support the proposal put forward by the Broadband Access Coalition (BAC),<sup>54</sup> which is reflected in the *NPRM* and which already has the support of most rural broadband providers. Major recipients of CAF subsidies, as well as the trade associations representing recent CAF II recipients, have supported this approach because it greatly reduces the costs and shortens the timelines for connecting more geographically remote or topographically challenging locations. Smaller rural operators (such as hundreds of internet service providers represented by WISPA, NTCA—The Rural Wireless Association, and the Rural Wireless Association) and larger incumbent rural carriers (including Frontier, Windstream

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<sup>53</sup> See The Carmel Group, *Ready for Takeoff: Broadband Wireless Access Providers Prepare to Soar with Fixed Wireless*, (2017), at 12, Fig. 6.

<sup>54</sup> Broadband Access Coalition, 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 in the 3700-4200 MHz Band, RM-11791 (filed June 21, 2017) (*BAC Petition*). See also Comments of New America's Open Technology Institute, American Library Association, the Benton Foundation, Consumer Federation of America, Consumers Union, the Institute for Local Self-Reliance, National Hispanic Media Coalition, Next Century Cities, Public Knowledge, the Schools Health & Libraries Broadband (SHLB) Coalition, and X-Lab, GN Docket No. 17-258, GN Docket No. 15-319, GN Docket No. 17-183, GN Docket No. 14-177 (Sep. 11, 2018), [https://ecfsapi.fcc.gov/file/1091216959118/PISC\\_Comments\\_SpectrumPipelineAct\\_FINAL\\_AsFiled\\_091118.pdf](https://ecfsapi.fcc.gov/file/1091216959118/PISC_Comments_SpectrumPipelineAct_FINAL_AsFiled_091118.pdf) ("PISC Mid-Band Comments").

and Consolidated) have all supported the proposal to open up the 3.7-4.2 GHz band for licensed P2MP fixed wireless services.<sup>55</sup> These companies are ready to utilize mid-band spectrum to bring high-speed and more affordable broadband services to rural Americans, including to more cost-effectively fulfill Connect America Fund objectives.

The FSS incumbents operating in the 3.7-4.2 GHz band have no basis to oppose the Commission’s proposal to put unused portions of this valuable but underutilized mid-band spectrum to use for fixed wireless and 5G networks.<sup>56</sup> The Commission, by implementing a spectrum sharing framework facilitated by automated frequency coordination, can implement the BAC proposal to open up the 3.7-4.2 GHz band while also shielding incumbent FSS providers from harmful interference *and* giving mobile carriers access to a portion of the band to enhance capacity for 5G networks in more densely-populated urban areas.<sup>57</sup>

The BCA coalition agrees with the Commission that “frequency coordination allows FSS and terrestrial fixed microwave to share the band on a co-primary basis, but coordination of mobile systems would be more complicated because [of] the movement of devices ....”<sup>58</sup> Fixed wireless P2MP systems are able to operate in the 3.7-4.2 GHz band without causing interference

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<sup>55</sup> See, e.g., Comments of Frontier Communications Corporation, Windstream Services, LLC, and Consolidated Communications; Comments of Rise Broadband, RM11791 (filed Aug. 3, 2017); Comments of Cal.net, Inc., RM-11791 (filed Aug. 7, 2017) ; Comments of All Points Broadband, RM11791 (filed Aug. 7, 2017); Comments of Hudson Valley Wireless, RM-11791 (filed Aug. 7, 2017); Comments of Highspeedlink, RM-11791 (filed Aug. 3, 2017); Comments of Southern Ohio Communication Services, Inc., RM-11791 (filed Aug. 2, 2017); Comments of Slopeside Internet, RM11791 (filed Aug. 7, 2017); Comments of NGL Connection, RM-11791 (filed Aug. 7, 2017), at 2 (“the larger companies will continue to offer their services to the urban and suburban areas, continuing to ignore the much needed access to wireless services in rural areas”). See also Comments of the National Spectrum Managers Association, RM-11791 (filed Aug. 7, 2017), at 5; Comments of the Fixed Wireless Communications Coalition, RM-11791 (filed Aug. 7, 2017), at 2; Comments of the Utilities Telecom Council, RM-11791 (filed Aug. 7, 2017), at 2, 5.

<sup>56</sup> PISC Mid-Band Comments, *supra*, at 28.

<sup>57</sup> *Ibid.*

<sup>58</sup> *NPRM* at ¶ 50.

to co-channel FSS systems in many local areas across the country.<sup>59</sup> The directional nature of *fixed* wireless P2MP permits the coordination of sectors even where earth stations are in the area, but located outside the beam of the base station and of the clients' return path and operating on different frequencies. This is particularly promising in rural areas where earth stations are less prevalent and especially where they are looking at only one or two satellite transponders that use only a small fraction of the 500 MHz band. For example, the Associated Press has acknowledged that its 975 receive-only earth stations are all fixed on a single transponder using just 23 megahertz of spectrum, potentially leaving 470 megahertz available for non-co-channel use by P2MP.<sup>60</sup> Similarly, National Public Radio's 475 earth stations use four satellite transponders, all of which transmit between 3702 – 3858 MHz.<sup>61</sup>

FSS and P2MP can even coexist on the same channel of spectrum when there is sufficient geographic separation. Co-channel sharing is possible by P2MP deployments in areas that do not have any nearby earth stations, or by using directional antennas that point away from earth stations that are close enough that interference is a risk.<sup>62</sup> For example, the real-world P2MP deployment on the Monterey Peninsula, undertaken by Google and Mimoso Networks, illustrated

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<sup>59</sup> See Broadband Access Coalition, Notice of Oral *Ex Parte* Presentation, GN Docket 17-183 and RM-11791 (March 29, 2018) ("Google/BAC Technical Presentation"). The technical analysis and presentation to FCC staff can be found at:

[https://newamericadotorg.s3.amazonaws.com/documents/BAC\\_Google\\_FCC\\_Technical\\_Preso\\_P2MP-FSS\\_Coex\\_FINAL\\_032718\\_1.pdf](https://newamericadotorg.s3.amazonaws.com/documents/BAC_Google_FCC_Technical_Preso_P2MP-FSS_Coex_FINAL_032718_1.pdf).

<sup>60</sup> As the Broadband Access Coalition explained in its Petition for Rulemaking, more specifically: "it appears that AP uses transponders on two different satellites that cover the United States. On the Intelsat 34 satellite, AP operates in a 23 megahertz channel at approximately 3748 – 3771 MHz. On the SES-2 satellite, AP operates in a 23 megahertz channel at approximately 3875 – 3898 MHz. In all cases, AP does not operate between 3800 and 4200 MHz. *BAC Petition* at 23.

<sup>61</sup> National Public Radio, *Ex Parte* Letter to Marlene H. Dortch, FCC, *Expanding Flexible Use in MidBand Spectrum Between 3.7 and 24 GHz*, Notice of Inquiry, GN Docket No. 17-183 (Nov. 8, 2017).

<sup>62</sup> PISC, *Mid-Band Comments* at 8.

the feasibility of extensive sharing by taking advantage of antenna directionality and other methods to avoid interference, even to nearby earth stations operating co-channel.<sup>63</sup>

***B. An Automated Frequency Coordination System Can Facilitate Opportunistic Access to Vacant FSS and Future Mobile Frequencies Across the Entire 3.7 GHz Band***

The *NPRM* proposes to authorize P2MP operators to coordinate shared access on a traditional *licensed* basis, under Part 101, but only in the upper portion of the band (“up to 160 megahertz,” although asking about greater or lesser amounts). We recognize that the Commission is seeking to clear and reallocate as much of the lower portion of the band as feasible (e.g., 3700-3900 MHz) for exclusive “flexible use” licenses that will most likely be utilized for mobile 5G networks. However, because this process of clearing and transitioning thousands of FSS earth stations higher up in the band will take years – and is also likely to occur in two stages – our groups strongly urge the Commission to make all of the future flexible use spectrum, as well as all of the frequencies that remain occupied by FSS, available for opportunistic sharing by P2MP fixed wireless operators, particularly in rural and tribal areas.

Just as fixed P2MP operators will make opportunistic use of licensed-but-vacant Priority Access spectrum in the adjacent 3.5 GHz band, under the new Citizens Broadband Radio Service (CBRS) rules, a similar “use it or share it” policy is feasible across the entire 3.7 GHz band using an automated frequency coordination system. Among other things, the Broadband Access Coalition Petition proposed that the Commission require all P2MP radios to be frequency agile, so that they can operate in any 20-megahertz channel across the entire 3700 – 4200 MHz band. This would enable P2MP operators to change frequencies in the event that a mobile operator in the bottom half of the band commenced service in a rural area (after many years), or in cases

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<sup>63</sup> See *Google/BAC Technical Presentation, supra*, at slides 23-41.

where FSS earth stations needed to change operating frequencies (e.g., moving to a different transponder) due to a technical outage or new commercial arrangement.

The Commission can immediately authorize the use of Part 101 coordination for P2MP fixed wireless deployments in the lower half of the band without foreclosing either the concurrent or future use of the band for “flexible use” licensing. Just like the adjacent CBRS band, if fixed P2MP operators are frequency agile and governed by an automated Part 101 geolocation database, the reallocation of a portion of the band to mobile carriers or any other service (e.g., 3700-3800 MHz) can be accommodated as necessary. As Google noted in comments supporting the Broadband Access Coalition proposal, as in CBRS, a requirement that P2MP devices are “interoperable over the entire [3.7-4.2 GHz] band . . . would ensure that such equipment will be capable of reconfiguration to adapt to any other future uses the FCC may permit in the band.”<sup>64</sup>

Finally, our groups propose that the Commission authorize a process to develop and certify an automated frequency coordination system to facilitate the band-wide coordination of shared use by P2MP providers at lower cost and with greater certainty that incumbent FSS earth stations and new mobile deployments will be fully protected from interference. Because the Fixed Service is already co-primary across the entire band, a manual Part 101 coordination process is already well-established for point-to-point links. However, thanks to recent advances in geolocation database technology, frequency coordination can be done faster, at lower cost, and with the ability to ensure that opportunistic users (such as GAA use of vacant licensed spectrum) are immediately denied permission to continue operating when an incumbent or higher-priority licensee commences service.

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<sup>64</sup> Reply Comments of Alphabet Access, Petition for Rulemaking of the Broadband Access Coalition, RM-11791 (Aug. 22, 2017).

We propose that the existing frequency coordination process should be automated as soon as practical. One or more automated frequency coordination (AFC) systems should be certified by the Commission to enforce real-time, real-world interference protection criteria for incumbent FSS earth stations, to enforce denials of permission to operate in areas where flexible use licensees eventually deploy and commence service, and to enable faster and more cost-effective coordination for P2MP deployments authorized under the proposed rules. AFC databases that incorporate real-world details on terrain, clutter (trees, buildings), and other GIS data sets can also enable far more intensive spectrum use.<sup>65</sup> The Commission should also require or at least encourage an AFC database informed by real-world GIS datasets that do not need to make generic, worst-case assumptions about interference.

### ***C. Mid-Band Spectrum for P2MP Fixed Wireless can Bring High-Speed Broadband to Rural Areas at Lower Cost Than Laying Fiber***

A major obstacle for internet service providers in bringing high-speed broadband to rural areas is the cost of deployment. It is extremely expensive to trench or hang fiber and other wireline broadband technologies in hard-to-reach areas, and often the business case is nonexistent, particularly for larger companies, when the population in that area is rather low.

However, fixed wireless offers a more cost-effective method of bringing high-speed broadband to targeted, hard-to-serve rural areas, which should in turn make the actual service more affordable, as prohibitive costs are a major obstacle to high-speed broadband adoption for rural Americans, even when and where it is available.<sup>66</sup> Deere & Company has told the

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<sup>65</sup> See Monica Allevan, “Google and other databases likely to make spectrum sharing easier,” *Fierce Wireless* (Oct. 12, 2017), <https://www.fiercewireless.com/wireless/google-and-other-databases-likely-to-make-spectrum-sharing-easier>.

<sup>66</sup> Edward Carlson and Justin Goss, “The State of the Urban/Rural Digital Divide,” National Telecommunications and Information Administration Blog (Aug. 10, 2016),



Commission previously that fixed wireless, along with mobile wireless, is likely to be the “superior technology choice to achieve cost-effective coverage for many rural areas including farm-intensive areas with significant tracts of cropland.”<sup>67</sup>

Fixed wireless costs much less per subscriber than fiber-to-the-home broadband. Jeff Kohler, co-founder and Chief Development Officer of Rise Broadband, estimates that the network cost per subscriber for his company is about \$250, while fiber-to-the-home deployment is likely closer to a “couple thousand” dollars.<sup>68</sup> Because fixed wireless avoids the need to dig up the streets or bury fiber in hilly, forested or other rough terrain, it is much more economical to the provider, according to Kohler.<sup>69</sup> The economical nature of fixed wireless is reflected in other studies as well, such as one from OVUM: “Fixed wireless has a much lower upfront cost to build than fiber. This lower cost makes reaching certain locations more economically feasible.”<sup>70</sup> Just as Verizon is using the enormous geographic-area licenses at 28 GHz to initially deploy gigabit-fast *fixed* wireless service to 32 million households – but limited to urban and suburban areas in the top 100 metropolitan markets<sup>71</sup> – rural, tribal, small town and exurban ISPs can use

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<https://www.ntia.doc.gov/blog/2016/state-urbanrural-digital-divide>, (“Even today, some remote rural communities still lack Internet access at all or the service available may be poor or prohibitively expensive.”).

<sup>67</sup> Deere & Company Comments at 3.

<sup>68</sup> Sarah Barry James, “Fixed wireless to shine in 2018 thanks to 5G, cost savings,” *S&P Market Intelligence* (April 6, 2018), available at

<https://platform.mi.spglobal.com/web/client?auth=inherit#news/article?id=44144018&cdid=A-44144018-13616>.

<sup>69</sup> *Ibid.* (“It’s more economical because you’re not digging up streets, you’re not burying cable or burying fiber,” Rise Broadband co-founder and Chief Development Officer Jeff Kohler said, noting, “The cost to outfit a tower to provide service to 50, 100, 200 households is not very expensive.”).

<sup>70</sup> “OVUM White Paper Reveals Growth in Fixed Wireless as an Alternative to Fiber for Enterprise-Class Services,” *Business Wire* (March 15, 2018),

<https://www.businesswire.com/news/home/20180315005732/en/OVUM-White-Paper-Reveals-Growth-Fixed-Wireless>.

<sup>71</sup> *3Q17 Cable Trends Review: Fixed Wireless Broadband Is Real, But It’s Not What It Seems*, New Street Research, (Jan. 13, 2018), <https://www.newstreetresearch.com/download-page/3q17-us-cabletrends-fixed-wireless-broadband-real-but-not-what-it-seems/>.

shared access to the 3.7-4.2 GHz band to make the provision of high-throughput fixed wireless economical in those higher-cost areas.

The Commission can help providers bring high-speed broadband to rural areas that are currently unserved by empowering fixed wireless providers to use the 3.7-4.2 GHz band to make efficient and cost-effective use of spectrum in areas where the business case for broadband has so far failed to attract ISPs.

## V. Conclusion

Rural Americans are disproportionately harmed by the digital divide in this country. A lack of access to high-speed and affordable fixed broadband is one of the several major factors leading to people moving away from rural areas. The Commission has the opportunity, with the 3.7-4.2 GHz band, to immediately make unused spectrum available to bring high-speed broadband to hard-to-reach and currently unserved rural areas through fixed wireless. The 3.7-4.2 GHz band presents a prime opportunity for the Commission to authorize robust band-sharing rules that achieve a win-win-win trifecta of critical public policy goals: first, to enable fixed wireless providers to bring high-speed broadband access to rural areas; second, to reallocate a substantial portion of the band available for mobile carriers to build mobile 5G networks; and third, to protect incumbent Fixed Satellite Services (FSS) licensees from undue disruption or harmful interference. Unlocking every megahertz of the grossly underutilized C-band will serve as part of the foundation for a more inclusive and robust 5G wireless ecosystem.

Respectfully submitted,

### **THE BROADBAND CONNECTS AMERICA COALITION**

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