

In the Matter of )  
 )  
Modernizing the FCC Form 477 Data Program ) WC Docket No. 11-10  
  
To: The Commission

Chuck Hogg, Chairman of the Board  
Mark Radabaugh, FCC Committee Chair  
Fred Goldstein, Technical Consultant

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## TABLE OF CONTENTS

SUMMARY .....	iii
Discussion .....	3
I. INTRODUCTION .....	3
II. WISPA MEMBERS EXPEND CONSIDERABLE TIME, MONEY AND RESOURCES TO COMPLETE FORM 477 .....	5
III. FIXED WIRELESS PROVIDERS SHOULD HAVE THE OPTION OF REPORTING DEPLOYMENT DATA AS GEOSPATIAL DATA INSTEAD OF CENSUS BLOCKS .....	6
IV. CERTAIN OTHER PROPOSED DATA COLLECTION PROCESS CHANGES FOR FIXED BROADBAND PROVIDERS ARE IMPRACTICAL AND BURDENSOME FOR SMALL PROVIDERS AND OFFER LITTLE BENEFIT .....	7
A. It Is Not Possible For Fixed Wireless Providers To Determine With Certainty Whether The Number Of Customers In A Census Block Will Be Readily Increased .....	11
B. It Is Not Realistic For Fixed Wireless Deployment Data Reporting At Sub-Census Block Levels To Include Information Whether Total Customers Served By A Particular Technology Could Be Increased.....	13
C. The Proposed Requirement to Geocode All Street Addresses Where Service Is Available Is Also Burdensome For Small Providers .....	14
V. CONTINUED SEMI-ANNUAL FORM 477 REPORTING WILL DOCUMENT UNSERVED AND UNDERSERVED AREAS IN A TIMELY AND MORE ACCURATE MANNER.....	15
VI. CHANGES TO FORM 477 WILL ENABLE THE COMMISSION TO HAVE TIMELY AND ACCURATE INDUSTRY INFORMATION THAT CAN ALSO IMPROVE IT’S INTERNAL RULEMAKING PROCESSES .....	16
VII. CONCLUSION.....	20

## SUMMARY

In this proceeding, the Commission seeks comment on how it should modernize FCC Form 477 and collect deployment data where broadband service will be/would be “available” on a more granular level, such as via street addresses or road segments. The Wireless Internet Service Providers Association (“WISPA”) strongly supports an effort to modernize FCC Form 477. However, such modernization must take into account the inherent differences in deployment and technology between *wired* broadband services and *fixed wireless* broadband services, as well as recognize and reduce the significant economic burdens on small providers imposed by some proposals.

WISPA represents the interests of the fixed wireless broadband industry, whose members are predominantly very small providers that offer high speed broadband service, voice, and often, video to approximately 4 million consumers, businesses, first responders, and community anchor institutions located in unserved and underserved areas via IP-based fixed wireless technology. Such technology, pioneered by WISPA’s members, is a vital and important solution to America’s digital divide problem because of its low start-up costs and ability to reach areas that are not served by traditional providers. Bringing broadband to hard-to-serve areas can be a difficult challenge and cannot be met with cookie-cutter networks or standard installation processes. If that were the case, these areas would not be underserved or unserved.

Unlike *wired* broadband services that use cable, fiber or copper that are run along streets and roads, fixed wireless broadband is deployed via innovative and creative engineering using licensed, lightly- licensed (shared spectrum) and/or unlicensed spectrum to connect customers to a wireless network, and by calibrating an antenna on the customer’s premises to the provider’s tower. A fixed wireless broadband provider often cannot determine with certainty whether its service is “available” until a skilled installer is working on the potential customer’s premises.

Each installation is unique because each customer's geographic location, building, other structures and obstacles may provide different challenges.

As to the Commission's proposed collection of deployment data at a sub-census block level (e.g., via street address or road segments), WISPA submits that such information would not be accurate and questions the utility of such an exercise. Given the inherent nature of fixed wireless broadband services that are not measured or constructed by street addresses or roads, it would take an extraordinary commitment of resources (human *and* financial) and time for fixed wireless broadband providers to determine with any certainty the street addresses or road segments of potential customers in a census block or service area. WISPs know the street addresses of existing customers but the identification of potential customers would require boots on the ground for each Form 477 reporting period in order to survey a census block and identify each street address. Such an effort would be time consuming and labor intensive, requiring additional expenses to complete Form 477 reporting, especially for small providers with few employees and limited financial resources for regulatory compliance. WISPA knows of no publicly available database that is updated at least annually that will provide street addresses in the United States.

Even if each street address or road segment in a census block could be identified, it would be not be possible to determine for FCC 477 reporting purposes (and subject to certification and non-compliance penalties) whether each street address will be/would be "available" for service until an on-site technical assessment is made at the installation stage. In addition, there are other factors that determine whether service can be deployed with any certainty and at what speeds that are reported on Form 477, such as: 1) number of users able to receive service from each access point; 2) the type and nature of the spectrum band (licensed,

lightly-licensed or unlicensed) that is ultimately used to provide service; and 3) the speeds that a provider reports.

WISPA supports the proposed submission of geospatial data as an alternative to reporting via census blocks for fixed wireless broadband providers as a more accurate reporting metric and a less burdensome process for WISPA's members. WISPA also supports the Commission's use of Form 477 for external and additional internal purposes, such as compliance with the Regulatory Flexibility Act ("RFA"), as amended. Including a requirement that providers identify what type of spectrum is used (licensed, lightly-licensed and/or unlicensed) via a check-box format will allow the Commission to adequately fulfill its statutory obligations under the RFA to identify and estimate the types and number of small entities that are subject to a proposed or final rule. As Congress' designated expert agency in the various communications industries, this is data that should be readily available to the Commission.

WISPA also requests that the Commission retain the semi-annual filing period for Form 477, as opposed to changing to an annual filing period, so long as the Commission adopts the proposed recommendations and considers the unnecessary burdens on small providers described in these Comments. Although an annual filing would impose fewer burdens on WISPA's members, it is important that their dedication and hard work invested to connect unserved and underserved areas be documented and recognized by all state and federal agencies. Reducing the frequency of Form 477 reporting would result in the information used for USF funding and the National Broadband Map being less current, and thus less accurate.

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

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Modernizing the FCC Form 477 Data Program ) WC Docket No. 11-10

To: The Commission

**COMMENTS OF  
THE WIRELESS INTERNET SERVICE PROVIDERS ASSOCIATION**

The Wireless Internet Service Providers Association (“WISPA”), pursuant to Sections 1.415 and 1.419 of the Commission’s Rules,<sup>1</sup> hereby comments on the Further Notice of Proposed Rulemaking (“*FNPRM*”) in the above-captioned proceeding.<sup>2</sup>

As the trade association representing hundreds of small fixed wireless broadband providers serving more than four million consumers in rural and other unserved and underserved areas where other providers decline to invest, WISPA strongly supports the Commission’s efforts to modernize its data collection under FCC Form 477, “Local Telephone Competition and Broadband Reporting,” OMB Control No. 3060-0816 (“Form 477”), to make the information provided accurate, timely and relevant. WISPA also strongly supports any efforts to reduce the disproportionate burdens of any new collection and reporting requirements on small providers. These are not necessarily conflicting objectives.<sup>3</sup>

The Commission acknowledges that Form 477 is a “principal tool used by the Commission to gather data on communications services, including broadband services, to help

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<sup>1</sup> See 47 C.F.R. §§ 1.415, 1.419.

<sup>2</sup> *Modernizing the FCC Form 477 Data Program*, Further Notice of Proposed Rulemaking, WC Docket No. 11-10, FCC 17-103, 32 FCC Rcd 6329 (2017) (“*FNPRM*”); see also *Modernizing the FCC Form 477 Data Program*, Order, DA 17-909, WC Docket No. 11-10 (rel. Sept. 19, 2017) (extending the public comment deadlines).

<sup>3</sup> See *FNPRM*, Statement of Commissioner Michael O’Rielly, at 6372 (“Additionally, if we can meet our data needs and policy obligations through less frequent reporting, particularly from already overburdened small providers, then we should provide any necessary relief.”).

inform our policymaking.”<sup>4</sup> Form 477 is also one of the Commission’s “most important datasets”<sup>5</sup> and it “base[s] so many of our significant policy decisions, on the information we receive from those filers.”<sup>6</sup> WISPA submits that the data collected also will help inform the Commission’s rulemaking processes because such data can provide very important information regarding the classification, services and estimated number of small communications and broadband entities that are regulated by the Commission. A description and estimate of such entities are required by the Regulatory Flexibility Act, as amended (the “RFA”).<sup>7</sup>

In these Comments, WISPA makes specific recommendations on the proposed changes to Form 477 and measures the Commission should take to reduce any unreasonable and unnecessary regulatory burdens. These recommendations reflect the results of a recent survey of WISPA members regarding Form 477 compliance, costs and burdens, and discussions with individual members. These Comments also reflect the reality that fixed *wireless* broadband is an inherently different technology than *wired* broadband, such as cable, fiber or copper. Certain the questions and proposals in the *FNPRM* are applicable and appropriate to the nature of wired broadband services, not the services provided by WISPA’s members.<sup>8</sup>

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<sup>4</sup> *FNPRM* at 6329.

<sup>5</sup> See *FNPRM*, Statement of Chairman Ajit Pai, at 6370 (“Pai Form 477 Statement”) (“Form 477 generates one of our most important data sets at the Commission, one we rely on every day . . . . In the two congressional hearings in which I participated last month, Form 477 was mentioned a total of nine times.”).

<sup>6</sup> *FNPRM*, Statement of Commissioner Mignon L. Clyburn, at 6371.

<sup>7</sup> 5 U.S.C. § 601 *et seq.*

<sup>8</sup> For example, the *FNPRM* makes several references to “road segments” p. 6343), “street segments” (*id.*), or “street addresses” pp. 6341-42). Providers that offer fixed *wired* broadband services using copper, cable or fiber know exactly where their plant is located and/or built-out to, and such services are constructed using roads and streets as a controlling parameter where service is “available.” Fixed *wireless* is very different because streets and roads do not dictate how or where service is constructed, and therefore, where service is available. Instead, the reach and penetration of the various available spectrum bands, obstructions between the tower and the customer, and the presence of potential harmful interference are controlling parameters for where service may be made available.

## Discussion

### I. INTRODUCTION

WISPA represents the interests of wireless Internet service providers (“WISPs”) that provide IP-based fixed wireless broadband services to consumers, businesses, first responders, and community anchor institutions across the country. WISPA’s members include more than 800 WISPs, equipment manufacturers, distributors and other entities committed to providing affordable and competitive fixed broadband services. WISPs use unlicensed spectrum, lightly-licensed spectrum (or “shared access” spectrum) and licensed spectrum to deliver last-mile broadband and voice services to more than four million consumers in rural and other unserved and underserved areas where other providers decline to invest. Many WISPs also rely on underground and aerial fiber to deploy hybrid wireless/fiber broadband networks where it is economically feasible for them to do so. Typical download speeds are in the range of 5 to 50 Mbps, a number that will increase as technology improves and equipment costs become more competitive.<sup>9</sup> In fact, “fixed wireless technology can support Gigabit download speeds.”<sup>10</sup>

Fixed wireless technology, pioneered by WISPA’s members, is a vital and important solution to America’s digital divide problem because of its low start-up costs and ability to reach areas that are not served by traditional providers.<sup>11</sup> WISPs are making a major impact on bridging the digital divide in unserved and underserved areas, using innovative and creative engineering, as well as sheer persistence in constructing networks that provide high-speed broadband, voice and, often, video services. This is the very type of noble effort that is enabling

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<sup>9</sup> The Carmel Group, *Ready for Takeoff: Broadband Wireless Access Providers Prepare to Soar with Fixed Wireless*, the BWA Industry Report (2017) (“Carmel Report”) at 5.

<sup>10</sup> *Id.*

<sup>11</sup> Fixed wireless technology has recently been embraced by larger entities such as Google and AT&T that recognize the merits of an efficient and affordable service that can be built-out quickly for relatively low costs. *See, e.g., Google Fiber Slowing Its Roll, May Mean More Fixed Wireless*, Inside Towers (Oct. 5, 2017), available at: <https://insidetowers.com/cell-tower-news-google-fiber-slowing-its-roll-may-mean-more-fixed-wireless/> (last visited Oct. 5, 2017).

the “democratization of entrepreneurship” heralded by Chairman Pai<sup>12</sup> and fulfilling one of the Commission’s major goals as documented in its National Broadband Plan: “Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.”<sup>13</sup> It is also important to recognize private sector investment and “to promote the spirit of entrepreneurship where it is needed the most.”<sup>14</sup>

A 2016 survey of WISPA’s membership brings to light the very small size and rural focus of its operator members.<sup>15</sup> The vast majority of respondents – 76.7 percent – reported serving 2,000 or fewer residential customers, and more than 56 percent reported having 1,000 or fewer residential customers. More than 75 percent of respondents indicated that they serve primarily rural areas. All respondents reported serving small businesses and more than 70 percent reported serving governments and first responders. More than half of the 196 respondents have one to five full-time employees, almost 70 percent have ten or fewer full-time employees, and 88 percent have 25 or fewer employees. These numbers are demonstrably less than the threshold size of 1,500 employees that the U.S. Small Business Administration uses to define “small entity” for Wireless Telecommunications Carriers (Except Satellite)<sup>16</sup> and at or below the threshold of 25 employees that defines “small business concern” in the Small Business Paperwork Relief Act of 2002.<sup>17</sup>

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<sup>12</sup> Remarks of then- FCC Commissioner Ajit Pai at the Brandery, *A Digital Empowerment Agenda*, Cincinnati, Ohio (Sept. 13, 2016) (“*Pai’s Digital Empowerment Agenda*”) (“Sadly there is a digital divide in this country . . . . For starters, we have to focus on bringing high-speed broadband to economically deprived areas. And to do that, we must recognize that deploying broadband isn’t easy. The Internet isn’t an abstraction. It’s a physical network of networks that requires massive investment to deploy and constant adjustment to manage.”).

<sup>13</sup> FCC, *Connecting America: The National Broadband Plan* (March 17, 2010) at XIV.

<sup>14</sup> *Pai’s Digital Empowerment Agenda*, at 11.

<sup>15</sup> 2016 WISPA Membership Survey.

<sup>16</sup> See 13 C.F.R. §121.201, NAICS Code 517210.

<sup>17</sup> See Small Business Paperwork Relief Act of 2002, 44 U.S.C. §§ 3501-20 (2002).

## **II. WISPA MEMBERS EXPEND CONSIDERABLE TIME, MONEY AND RESOURCES TO COMPLETE FORM 477**

WISPA's members have expressed concern that certain proposed revisions to Form 477 for fixed wireless broadband providers will require an increased investment of time, financial and/or human resources to complete and submit Form 477 *twice a year*. These additional regulatory compliance costs are in addition to the significant increase in such financial and human resources incurred due to changes to Form 477 imposed by the Commission just a few years ago.<sup>18</sup> In fact, to comply with the 2014 change in requirements, the vast majority of WISPA members responding to our recent Form 477 Survey incurred additional costs for reporting via census blocks. Seventy percent purchased new software or vendor services. Almost half, 47 percent, paid overtime for in-house personnel, and 29 percent hired outside personnel (including engineering consultants, part-time workers and/or lawyers). The above combined percentages exceed 100 percent, showing that many members had to shoulder the costs of *all* three expenses.

Today, the financial expenses for compliance (including purchase of software and hardware, service provider fees, and/or any consulting fees) range from under \$100 up to \$50,000 annually, depending on the type of metrics and services used to measure deployment data, the number of existing subscribers and the size of the provider. The survey results report that 30 percent of respondents spend under \$100 up to \$999 annually; 23 percent spend from \$999 up to \$1999 annually; 24 percent spend from \$1999 up to \$4999 annually; and 23 percent spend \$5000 or more annually, with a considerable number of that group exceeding \$20,000 per

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<sup>18</sup> See generally, *Modernizing the FCC Form 477 Data Program*, Report and Order, WC Docket No. 11-10, 28 FCC Rcd 9887 (2013) (*inter alia*, requiring the collection of deployment data and reporting by census blocks). The new collection and reporting rules became effective in June 2014 after OMB approval. See *Modernizing the FCC Form 477 Data Program*, Final Rule; announcement of effective date, WC Docket No. 11-10, 79 Fed. Reg. 36231-32 (June 26, 2014).

year. The Commission's proposed revisions in this proceeding would definitively increase these compliance costs for WISPA members because of the need to update software and/or equipment from third party billing vendors, or hire additional personnel and/or engage other vendors or legal counsel to try to identify more granular deployment data. This would be a huge and expensive commitment for a very low probability of accurate data.

As reported in our recent survey, including the time spent by the member's principals, part-time and full-time employees, and outside personnel, the average time expended for semi-annual compliance is 76.6 hours per year. However, this average figure does not illustrate the wide range in compliance burdens, especially by smaller providers. For example, 20 percent spend between 76 and 1,300 hours a year. And more than a third of respondents, 34 percent, reported that they do not have in-house staff support to complete Form 477. Those members with small staffs and without in-house support spend more money and time in completing Form 477.

### **III. FIXED WIRELESS PROVIDERS SHOULD HAVE THE OPTION OF REPORTING DEPLOYMENT DATA AS GEOSPATIAL DATA INSTEAD OF CENSUS BLOCKS**

The Commission proposes several extensive revisions to Form 477 that are intended to collect deployment data from fixed providers on a more granular level than by census blocks.<sup>19</sup> One proposal is to allow fixed broadband providers to have the option of reporting deployment data by "filing geospatial data showing coverage areas (i.e., polygons of coverage filed via shapefiles or rasters)."<sup>20</sup> WISPA supports this proposal as a means to more accurately ascertain deployment data and as a less burdensome reporting metric for its members than reporting by census blocks.

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<sup>19</sup> See *FNPRM* at 6341.

<sup>20</sup> *Id.*

In its recent member survey regarding the costs and labor involved in completing Form 477, many reported using various methods and resources to report deployment data. A little more than 57 percent currently generate polygons using various tools to determine deployment data, with the vast majority using polygons created by third-party RF propagation analysis (44 percent) and the rest using internal RF propagation analysis (13 percent).<sup>21</sup> The time consuming and burdensome element in the current census block reporting requirement is the need for someone to then identify the census blocks within a polygon. If a fixed provider can submit the baseline polygon, whether in a shapefile or raster format, the extra step of identifying the census blocks can be avoided, thus saving time and money. In addition, the Commission and the public can have a more accurate understanding of the provider's service area.

The Commission also asks whether providers routinely store broadband footprints as geospatial coverage data.<sup>22</sup> Providers traditionally run geospatial data in real-time as they prepare Form 477 reports, without look-back or storage capabilities, unless they have purchased a special licensed software program such as Tower Coverage.com. Although all providers maintain some type of coverage map/data for business reasons and undertake an evaluation of distance and obstacles in a service area, a provider may not go through the time and expense to create a polygon or generate a RF propagation report or geocode the service data until that information is needed for regulatory purposes.

#### **IV. CERTAIN OTHER PROPOSED DATA COLLECTION PROCESS CHANGES FOR FIXED BROADBAND PROVIDERS ARE IMPRACTICAL AND BURDENSOME FOR SMALL PROVIDERS AND OFFER LITTLE BENEFIT**

The Commission seeks comment on several other ways to collect more granular deployment data from fixed providers, including a requirement to indicate whether total

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<sup>21</sup> A much smaller percentage reported using spectrum analyzers (4 percent) and 5.33 percent reported using drive tests.

<sup>22</sup> *FNPRM* at 6341.

customers served by a particular technology could be increased in each census block listed on deployment data;<sup>23</sup> collection of data at the sub-census block level, such as street address;<sup>24</sup> and whether the provider should be required to geocode all addresses in which service is available.<sup>25</sup> Although WISPA understands the value of information regarding deployment and potential service areas, the compliance difficulty and collection burdens in these proposals for small fixed wireless providers far outweigh the benefits. First, it is important to understand and appreciate the unique attributes of fixed wireless broadband service. WISPs are often the only fixed terrestrial broadband providers offering service in unserved and underserved areas. As then-Commissioner Pai acknowledged, “WISPs have deployed wireless broadband to customers who often have no alternatives. They rely heavily on unlicensed spectrum, take no federal subsidies, and often run on a shoestring budget with just a few people to run the business, install equipment, and handle service calls.”<sup>26</sup>

These areas are unserved and underserved by traditional providers for a reason – they are hard-to-serve and do not support the ROI models of traditional wireline providers. Fiber and cable deployment in rural areas and many suburban markets is not cost effective given the high cost of equipment per location, the low population density, and/or rugged or forested terrain.<sup>27</sup> Bringing broadband to hard-to-serve areas can be a difficult challenge and cannot be met with cookie-cutter networks or standard installation processes. If that were the case, such areas would not be underserved or unserved.

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<sup>23</sup> See *id.* at 6340.

<sup>24</sup> See *id.* at 6342.

<sup>25</sup> See *id.*

<sup>26</sup> See *Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601, 5931 (2015) (“*Title II Order*”), Dissenting Statement of Commissioner Ajit Pai, *aff’d*, *United States Telecom Ass’n v. FCC*, 825 F.3d 674 (D.C. Cir. 2016), *reh’g denied*, 855 F.3d 381 (D.C. Cir. 2017).

<sup>27</sup> See Carmel Report, *supra* n.9, at 6.

This is how a fixed wireless broadband network works:

In a typical [Broadband Wireless Access] network, broadband content is received by the BWA provider from an external distribution point via fiber or microwave connections. From there, signals are delivered to BWA customers via wireless transmitters on towers. The towers are interconnected by licensed or unlicensed spectrum and can carry up to 5 to 10 Gigabytes of capacity. Customers receive the signals via antennas that are attached to the subscribers' premises . . . . Within the subscribers' premises, the signal is most commonly delivered via a Wi-Fi router or ethernet cable to personal computers, TV monitors, and other stationary and mobile devices in the home or business.<sup>28</sup>

As stated above, fixed wireless providers often use a combination of licensed, lightly-licensed and unlicensed spectrum, such as 900 MHz, 2.4 GHz, 2.5 GHz, 3650-3700 MHz and 5 GHz. Lower frequencies (e.g., TV white space and 900 MHz bands) propagate well through trees and other obstacles, such as buildings and other structures. In order to secure a reliable connection between the provider's tower and the customer's antenna, a provider's skilled installation technician must calibrate on-site at the customer's premises the optimum position of the antenna and if necessary, to adjust the antenna on the customer's premises to account for obstructions (e.g., the number of trees and/or their height and width) and/or other obstacles.<sup>29</sup> Each installation is unique because each customer's geographic location, building, other structures and obstacles may provide different challenges. In addition, there are other factors that determine whether service can be deployed with any certainty and at what speeds that are reported on Form 477, such as: 1) number of users able to receive service from each access point;<sup>30</sup> 2) the type and nature of the spectrum band that is ultimately used to provide service;<sup>31</sup>

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<sup>28</sup> *Id.* at 7.

<sup>29</sup> WISPA is not aware of any report, study or other resource that provides accurate or comprehensive clutter data to account for terrain and other obstacles. The available clutter data is fairly high level and is not accurate in real time nor at the street level. To achieve a high level of accuracy, such an assessment often must be made with authorized access to the customer's premises, not via a drive test.

<sup>30</sup> The more users connected via a particular access point increases the potential for lower speeds if a large number of users are accessing the connection at the same time.

and 3) the speeds that a provider reports.<sup>32</sup> Notwithstanding these challenges, WISPs provide customized installations in hard-to-serve areas with the overall objective to connect as many customers as possible.

Given this inherent customized nature of fixed wireless services, the threshold issue with the proposed modifications to Form 477 is the degree of certainty a provider will be required to report more granular data subject to a certification of filing accuracy and non-compliance penalties.<sup>33</sup> The Commission acknowledged that the meaning of “availability” where a provider could (without an extraordinary commitment of resources) provide service may be “multifaceted.”<sup>34</sup> There is a distinct difference between the current reporting of what *could* be provided (assuming that the technical line-of-sight issues for tower/antenna placement are not insurmountable and do not need an extraordinary commitment of resources), and reporting more definitive granular information, using the terms “*would* be readily increased within a standard interval upon request,” or “*will be* accommodated”, or “*will be* added within a standard interval upon request” as proposed by the Commission.<sup>35</sup>

WISPA’s members have a very beneficial business incentive to determine with certainty where potential new customers are available for service based on more granular data. With such information, fixed wireless service providers would enjoy a 100 percent success rate for

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<sup>31</sup> In some cases, the provider will not know the best spectrum option until it visits the premises, makes a physical inspection of the area where the antenna is to be mounted and establishes a connection to the access point.

<sup>32</sup> For example, speed may be affected by the number of users using the access point, the bandwidth that is shared among end users and other factors. It may be possible for a provider to offer 10/1 Mbps speeds using one solution and 25/3 Mbps using another solution at the same location, and the provider will offer the service that consumers demand. Determining with any degree of accuracy the level of service that can be deployed at a given location at a given time is not a scientific exercise, but one that depends on a large number of variable factors.

<sup>33</sup> 47 U.S.C. §§ 220(e), 502-503; *see also* FCC Form 477, *Local Telephone Competition and Broadband Reporting Instructions*, OMB Control No. 3060-0816 (Dec. 5, 2016), Section 7.3, *Certification of Filing Accuracy*, at 32 and Section 7.6, *Compliance*, at 33.

<sup>34</sup> *FNPRM* at 6339-40.

<sup>35</sup> *Id.* at 6340.

installations (as opposed to 70-80 percent in very hard-to-serve areas),<sup>36</sup> which would increase a provider's revenue substantially and would allow for increased and faster expansion and upgrades to its network. However, if a provider is not able to ascertain this information for advantageous business purposes, it certainly cannot do so for regulatory and reporting purposes. And definitely not under the high standards that the Commission proposes and subject to its non-compliance penalties.

**A. It Is Not Possible For Fixed Wireless Providers To Determine With Certainty Whether The Number Of Customers In A Census Block Will Be Readily Increased**

The Commission asks whether it should require fixed broadband providers to “indicate whether total customers served on a particular technology could be increased in each census block listed when they report deployment data.”<sup>37</sup> Specifically, the Commission seeks comment on three categories of service areas that would be reported for each technology code:

(1) areas where there are both existing customers served by a particular last-mile technology, and total number of customers using that technology can, *and would, be readily increased* within a standard interval upon request; (2) areas where existing customers are served but no net-additional customers using that technology *will be* accommodated; and (3) areas where there are no existing customers for a particular technology but new customers *will be* added within a standard interval upon request.<sup>38</sup>

WISPA members want and are willing to secure more business by increasing their customer base in a service area. However, unlike other technology platforms such as mobile, fiber, cable, or satellite, it is not possible to determine with any certainty what potential customers will be or would be readily served using fixed wireless technology until an on-site technical assessment is made. Although the survey respondents providing fixed wireless

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<sup>36</sup> Even a 10 percent failure rate for installation represents a high cost in lost opportunity and labor; a lot of work for no payoff. But this effort is what is necessary to reach the hardest-to-serve areas and try to make a difference.

<sup>37</sup> *FNPRM* at 6340.

<sup>38</sup> *Id.* (emphases added).

services know the specific service addresses for all current customers, 83 percent do not know the specific service address for all *potential* customers in a service area, and 74 percent responded that they cannot readily get that information. Moreover, 92 percent stated that they would incur an additional cost to secure the information.

Identifying each and every potential customer in a census block would require boots on the ground for each reporting period in order to accurately record each service address as the topography is constantly changing. There are no readily available databases that provide this information to the public.<sup>39</sup> Such an effort requires enormous time and expense because a real person or persons have to be assigned the task to travel across the census block and record all street addresses, if street addresses are readily available.<sup>40</sup> For the majority of WISPA members with a limited number of employees (especially those members without internal support), this would require hiring new employees, paying overtime for existing employee(s), engaging third party vendors or consultants, and for some, a combination of each. Each of these twice-annual options alone is time-consuming and expensive and thus, very burdensome, particularly since the identification of every potential service address (or street segment) in a census block is only the first step. There still must be an assessment of the technical feasibility of actual delivery of the service to that street address, meaning that the potential customer (and perhaps the property owner for leased locations) must authorize the service provider to be physically on the premises. A fixed wireless provider, however, cannot make a reasonable technical assessment until the potential customer expresses interest in the service and the provider has confirmed that service

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<sup>39</sup> Even the Commission acknowledges that there are not available resources for annually updated housing information in a census block. *See FNPRM* at 6342 n.64.

<sup>40</sup> Some rural areas have only visible rural route signs. Converting rural routes to street addresses is an additional time-consuming multi-step process. *See, e.g.*, <https://www.sapling.com/5942916/physical-address-rural-route> (last visited Oct. 4, 2017).

can be deployed. This process applies equally to new homes that are constructed during the reporting period. There is no drive-by or fly-by test that works for fixed wireless deployments.

**B. It Is Not Realistic For Fixed Wireless Deployment Data Reporting At Sub-Census Block Levels To Include Information Whether Total Customers Served By A Particular Technology Could Be Increased**

The Commission seeks comment whether it should collect data at a sub-census block level, such as street addresses.<sup>41</sup> WISPA members know the service address of their existing customers, but 87 percent of survey respondents reported they do not have the ability to determine which street addresses they do *not* cover in census blocks that they partially cover. More than 43 percent indicate that they do not have the resources necessary to prepare this information, and another 50 percent stated that they can provide the information only by spending significant internal time or by using external resources.

As discussed above, identifying all street addresses in a census block requires boots on the ground, a time consuming and expensive effort. When a potential new customer contacts a member's sales department, the salesperson will review the service address to get some idea of the technical challenges upon installation. Nonetheless, there can be no certainty regarding a successful connection until a skilled installer is on the premises to determine the best location of the customer's antenna and makes adjustments based on which spectrum band is optimum in terms of consumer demand, performance and interference avoidance.<sup>42</sup>

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<sup>41</sup> See *FNPRM* at 6343.

<sup>42</sup> As for reporting information for Multiple Dwelling Units ("MDUs"), WISPA is not aware of any publicly available, nationwide data set containing address and location, nor altitude information to determine what units on what floors are located in a service area. Moreover, each level or floor may carry unique challenges for fixed wireless providers, given the line-of sight restriction in some spectrum bands. Therefore, the knowledge of an existing MDU in a service area, without a technical assessment of whether the fixed wireless service can be installed, is not helpful.

**C. The Proposed Requirement to Geocode All Street Addresses Where Service Is Available Is Also Burdensome For Small Providers**

Consistent with the inherent difficulty of accurately identifying a provider's ability to serve potential customers in a census block, a requirement to geocode all such addresses where service is available is extremely burdensome for small providers. While geocoding is a familiar metric for WISPA members and is less burdensome than sub-census-block level reporting, it is not without costs. Half of the survey respondents currently use geocoding,<sup>43</sup> but if the type of information to be geocoded were to be expanded, 64 percent reported that they would need to pay more money for a service/software enhancement and 24 percent said that they would need to contract with a different provider. The remaining half that do not currently use geocoding would need to start from scratch and incur new costs to acquire software and/or third-party services.<sup>44</sup> Each of these options carries an additional financial expense, as well as a loss of 'investment in the business' cost.<sup>45</sup>

Some WISPA third-party billing vendors provide support to members for Form 477 reporting. The vendor provides latitude and longitude data reports based on the street addresses of existing customers. Such reports are run in real time and are not stored, nor are such reports available based on previous data or time periods. Significantly, the vendors do not have the data, software or algorithms to run geocoding based on potential customers, whether by census block or street address. Vendors depend on the foundational data provided by the WISP (e.g., subscriber lists) in order to generate the necessary reports. If the Commission requires a change in Form 477 reporting, whether for sub-census blocks or street addresses, a vendor will need to

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<sup>43</sup> 2017 WISPA Form 477 Survey.

<sup>44</sup> Third party geocoding services are estimated to be \$1,500 annually. This fee only provides access to the database. There are still the costs of a person assigned to input the provider's data and run the reports. Obviously, these costs will vary depending on whether this person is a full or part-time employee, or a third party.

<sup>45</sup> See Statement of Chairman Ajit Pai, *FNPRM*, at 6370 ("And every dollar we make providers – whether big or small – spend filing data that we don't need is a dollar they can't devote to connecting Americans.").

redesign its program and write new software, described as a “major undertaking” and incurring “enormous development costs,” as well as months of research.<sup>46</sup> Material changes to reporting Form 477 deployment reports are neither easy, nor inexpensive for any provider, especially small or mid-sized providers that have limited staff and budgets.

WISPA therefore recommends that the Commission provide an option for fixed wireless providers to report deployment data based on *either* the current census block level *or* by using geospatial data. WISPA is not supportive of Form 477 reporting at sub-census block levels given the high costs to its members, and the inherent difficulties and inaccuracy of any such data for fixed wireless providers.<sup>47</sup>

**V. CONTINUED SEMI-ANNUAL FORM 477 REPORTING WILL DOCUMENT UNSERVED AND UNDERSERVED AREAS IN A TIMELY AND MORE ACCURATE MANNER**

The Commission seeks comment on whether Form 477 reporting should shift from a semi-annual to an annual filing period.<sup>48</sup> WISPA supports the continued reporting of Form 477 on a semi-annual basis, so long as the Commission adopts the proposed recommendations and considers the burdens described in these Comments. As time consuming, costly and difficult as it may be to complete and file Form 477 twice a year (even with the less burdensome measures WISPA has recommended), it is important that the data used to identify eligible areas for universal service support be reasonably accurate and current. Although an annual filing would

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<sup>46</sup> One vendor estimated a minimum of \$250,000 in development costs, still with some uncertainty regarding the accuracy of the data since there are no readily available public databases that would identify potential customers via street addresses or MDUs. It is unknown at this time how/if such development costs will be passed on to the provider customer or how/if such costs can be recovered by the vendor.

<sup>47</sup> “Deploying broadband is hard, expensive, and time-consuming work, whether you’re trenching fiber, attaching equipment to poles, or setting up a gateway earth station. Red tape shouldn’t make those tasks even harder. To me, it’s pretty simple: *With rules that make it easier to deploy broadband, we will see more broadband deployed.* And in turn, we can empower millions of Americans with digital opportunity.” Remarks of FCC Chairman Ajit Pai at the First Meeting of The Federal Communications Commission’s Broadband Deployment Advisory Committee, Washington, DC (Apr. 21, 2017) at 1 (emphasis added).

<sup>48</sup> *FNPRM* at 6348.

be less burdensome on WISPA's members, it is important that their dedication and hard work invested to connect unserved and underserved areas be documented and recognized by all state and federal agencies. WISPA members are often self-supported, putting their personal capital at risk in building access in places where other providers have chosen not to serve.

Reducing the frequency of Form 477 reporting would result in the information being less current, and thus less accurate. In cases where a new deployment area is added in, say, January and not reported until the end of the calendar year, the annual reporting could result in a Commission determination that the area is unserved and that Connect America Fund ("CAF") support should be applied to that area. This outcome would increase the likelihood that CAF support will be used to subsidize areas where service is available, a result the Commission's universal service policies are wisely intended to avoid. By the same token, WISPA's members also wish to be eligible for CAF or other federal, state or local government funding, and do not want to receive support where another fixed provider initiated service since the last reporting period. Reducing the frequency of Form 477 reporting will lead to more cases where information is not as current.

WISPA also supports the use and availability of Form 477 data to update the National Broadband Map.<sup>49</sup> WISPA members also will benefit from a searchable national map of recent deployment data.

## **VI. CHANGES TO FORM 477 WILL ENABLE THE COMMISSION TO HAVE TIMELY AND ACCURATE INDUSTRY INFORMATION THAT CAN ALSO IMPROVE IT'S INTERNAL RULEMAKING PROCESSES**

The Commission acknowledges that it uses Form 477 data for external reasons and internal use, such as reviewing mergers and acquisitions, implementing the CAF program, and gathering information to support conclusions for the annual Section 706 inquiry and the 2017

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<sup>49</sup> *Id.* at 6348-9.

Business Data Service Order.<sup>50</sup> The Commission also states that one of its primary objectives is to ensure that the data it collects “are closely aligned with the uses to which they will be put.”<sup>51</sup> To this end, the Commission seeks comment whether there are other *external* uses for an updated Form 477.<sup>52</sup> WISPA submits that the Commission should have also asked whether there are other *internal* uses for Form 477.

The RFA was designed to reduce the economic impact of regulations on small business and acts as a “statutorily mandated analytical tool” to assist federal agencies in rational decision making processes.<sup>53</sup> Moreover, “a regulatory flexibility analysis is, for APA purposes, part of an agency’s explanation for its rule.”<sup>54</sup> Section 603 of the RFA requires the Commission to prepare and make available for public comment an initial regulatory flexibility analysis (“IRFA”) that describes the significant economic impact of the proposed rules on small entities subject to those proposed rules.<sup>55</sup> As a threshold measure, an IRFA must include “a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply.”<sup>56</sup> Although the IRFA is not judicially reviewable, “a proper IRFA is necessary to provide the foundation for a good FRFA . . . . Further, without an adequate IRFA, small entities cannot provide informed comments on regulatory alternatives that are not adequately addressed in the

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<sup>50</sup> *Id.* at 6338-9.

<sup>51</sup> *Id.* at 6331.

<sup>52</sup> *Id.*

<sup>53</sup> Office of Advocacy, U.S. Small Business Administration, *A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act* (May 2012), at 2 (citations omitted) (“Advocacy RFA Guide”).

<sup>54</sup> *National Telephone Cooperative Ass’n v. FCC*, 563 F.3d 536, 540 (D.C. Cir 2009) (citing to *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 539 (D.C. Cir. 1983) (“a reviewing court should consider the regulatory flexibility analysis as part of its overall judgment whether a rule is reasonable”) (additional citations omitted)).

<sup>55</sup> 5 U.S.C. § 603(a).

<sup>56</sup> 5 U.S.C. § 603(b)(3).

IRFA.”<sup>57</sup> An FRFA also has a similar requirement to provide a description and estimate of the classes of small entities directly regulated by the rule.<sup>58</sup>

The Commission’s IRFAs and FRFAs over the past few years, including the IRFA in this proceeding (“*Form 477 IRFA*”), fall far short of meeting these statutory requirements. Although the Commission has acknowledged that the broadband Internet access service provider industry has changed since the definition was introduced in 2007,<sup>59</sup> it has done little to update its own internal data regarding the industry for RFA reporting and other purposes. For example, the *Form 477 IRFA* states that the *FNPRM* will discuss “several different types of entities that *might* be providing broadband Internet access service” and purports to include “small entities that provide broadband Internet access service over unlicensed spectrum.”<sup>60</sup> However, the Commission states that “*we have no specific information on the number*” of such entities.<sup>61</sup> Over several pages, the *Form 477 IRFA* proceeds to discuss various different categories of broadband Internet access service providers – cable, satellite, wireline, mobile and others – an unnecessarily broad and outdated technology-based approach. But conspicuously absent from this discussion is any mention whatsoever of the “small entities that provide broadband Internet access service over unlicensed spectrum” that the Commission initially mentioned.

As noted above, an IRFA requires “a description of and, *where feasible*, an estimate of the number of small entities to which the proposed rule will apply.”<sup>62</sup> The Merriam-Webster Dictionary defines the word feasible as “capable of being done or carried out.”<sup>63</sup> In short, the Commission has failed to make a reasonable good-faith effort to estimate how many small

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<sup>57</sup> Advocacy RFA Guide at 68 (citations omitted).

<sup>58</sup> 5 U.S.C. § 604(a)(4).

<sup>59</sup> *FNPRM* at 6353, *Form 477 IRFA*, ¶ 6.

<sup>60</sup> *Id.* at 6354 (emphasis added) .

<sup>61</sup> *Id.* (emphasis added).

<sup>62</sup> 5 U.S.C. § 603(b)(3) (emphasis added).

<sup>63</sup> Merriam-Webster.com, available at <http://www.merriam-webster.com/dictionary/feasible> (last visited Oct. 5, 2017).

broadband providers use unlicensed spectrum. The Commission's ability to estimate the number of small fixed wireless Internet providers is indeed feasible and is long overdue given the demonstrable growth of fixed wireless broadband providers over the past decade and the important role they play in providing broadband service to underserved and unserved communities.

As discussed in the introduction to these Comments, all of WISPA's members are currently "small business entities" as defined by the U.S. Small Business Administration. Fixed wireless broadband service, however, has grown exponentially in the past five years. According to the Commission's *2017 Internet Access Report*, residential fixed wireless connections quadrupled from June 2012 to June 2016, the largest increase of any terrestrial broadband technology.<sup>64</sup> According to the Carmel Report, this trend is expected to continue, forecasting a doubling of customer growth in the next five years.<sup>65</sup> Primary drivers of this expected growth include dramatically lower deployment costs; declining equipment costs fueled by competition and global standards; improved technology that enables faster speeds and higher throughput; and rising consumer demand for video.<sup>66</sup> Quoting a study prepared by consulting firm Wireless 20/20, RCRWireless reported that "fixed wireless could reduce capital expenditures by more than 50% for many low-density CAF II funded high-cost rural broadband deployments."<sup>67</sup> Because of the lower-cost model, WISPs can serve sparsely populated areas where the cost to deploy wireline technologies is prohibitive and can begin receiving a return on investment in less

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<sup>64</sup> See *Internet Access Services: Status as of June 30, 2016*, Industry Analysis and Technology Division, Wireline Competition Bureau (April 2017) ("*2017 Internet Access Report*"), at 18, Fig. 16 (speeds of at least 3 Mbps downstream and 768 kbps upstream as reported on FCC Form 477).

<sup>65</sup> See Carmel Report, *supra* n.9, at 10, Fig. 4.

<sup>66</sup> See *id.* at 11-16.

<sup>67</sup> Berge Ayvazian, *Analyst Angle: 4G LTE leveraged for fixed wireless broadband in rural communities*, RCRWIRELESS, June 6, 2017, available at <http://www.rcrwireless.com/20170606/analyst-angle/20170606wireless4g-lte-leveraged-for-fixed-wireless-broadband-in-rural-communities-tag10> (last visited Oct. 5, 2017).

than one year,<sup>68</sup> and therefore can re-invest capital into network deployment, upgrades and customer acquisition.

The Commission is required to consider its own data collection and resources in its compliance with the RFA.<sup>69</sup> Significantly, through the current version of FCC Form 477, Terrestrial Fixed Wireless providers – a category that includes WISPs that use unlicensed spectrum – the Commission has ready access to information on the number of entities using wireless technology to provide broadband services. The Commission also has access to the National Broadband Map, which includes a “fixed wireless” layer.

Therefore, to provide a more accurate profile of the fixed wireless broadband industry, the Commission should also revise Form 477 to collect additional industry information such as whether a broadband provider uses licensed spectrum, lightly licensed, unlicensed spectrum, or a combination thereof. To ease any collection burdens, WISPA suggests that a simple and easy check-box format could be used. By identifying the number of small fixed wireless broadband providers that use unlicensed spectrum, the Commission can better craft rules that will reduce regulatory burdens on small businesses that can help foster competition and increased deployment.

## **VII. CONCLUSION**

WISPA appreciates the Commission interest in both obtaining better broadband data and ensuring that burdens on reporting entities do not outweigh the benefits. WISPA’s Comments demonstrate that small fixed wireless broadband providers face significant additional costs and uncertainty with some forms of more granular reporting, and the inherent nature of fixed wireless

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<sup>68</sup> See Carmel Report at 12.

<sup>69</sup> See *North Carolina Fisheries Ass’n, Inc. v. Daley*, 27 F. Supp. 2d 650, 659 (E.D. Va. 1998) (agency failed to comply with the RFA when it “completely ignored readily available” data in determining the number of small entities impacted by the agency’s actions).

services. The Commission must weigh its proposals with the degree of inaccuracy and difficulties in the collection and submission of additional data for small fixed wireless providers, and consistent with its obligations under the RFA, take these difficulties and related burdens discussed herein into account and consider ways in which those burdens can be eliminated or minimized. The Commission should adopt WISPA's recommendations as described above.

Respectfully submitted,

**WIRELESS INTERNET SERVICE  
PROVIDERS ASSOCIATION**

October 10, 2017

By: /s/ *Chuck Hogg*, Chairman of the Board  
/s/ *Mark Radabaugh*, FCC Committee Chair  
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