

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

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

To: Chief, Wireless Telecommunications Bureau  
Chief, International Bureau  
Chief, Office of Engineering and Technology  
Chief, Office of Economics and Analytics

**COMMENTS OF THE PUBLIC INTEREST SPECTRUM COALITION**

Open Technology Institute at New America  
Schools Health Libraries Broadband Coalition  
American Library Association  
Consumer Reports  
Next Century Cities  
Public Knowledge  
Common Cause  
National Hispanic Media Coalition  
Tribal Digital Village Network  
Institute for Local Self Reliance  
Access Humboldt  
x-Lab

August 7, 2019

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The Public Interest Spectrum Coalition (“PISC”)<sup>1</sup> hereby submits these comments in response to the Federal Communications Commission’s (the Commission) Notice of Proposed Rulemaking (“NPRM”) in the above-captioned proceeding.<sup>2</sup>

**I. INTRODUCTION AND SUMMARY**

PISC fully supports the Commission’s proposal in the *NPRM* to authorize the coordination of fixed wireless deployments in the ongoing FSS portion of the band. The Commission should go further to address the rural digital divide by also authorizing coordinated

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<sup>1</sup> For over a decade the Public Interest Spectrum Coalition (PISC), a coalition of national nonprofit organizations, has advocated policies to promote broadband access, adoption and affordability for all through more open, unlicensed and shared spectrum, as well as more robust mobile market competition. PISC groups expressly signing onto the coalition’s comments in this proceeding include the Open Technology Institute at New America, Consumer Reports, National Hispanic Media Coalition, American Library Association, Next Century Cities, Public Knowledge, Common Cause, the Schools Health Libraries Broadband Coalition, Tribal Digital Village Network, the Institute for Local Self Reliance, x-Lab and Access Humboldt.

<sup>2</sup> Public Notice, *Wireless Telecommunications Bureau, International Bureau, Office of Engineering and Technology, and Office of Economics and Analytics Seek Focused Additional Comment in 3.7-4.2 GHz Band Proceeding*, GN Docket No. 18-122, RM-11791, RM-11778, DA 19-678 (rel. July 19, 2019) (“Public Notice”).

sharing on an opportunistic basis in locally-unused portions of the future flexible-use portions of the band.

The Reed Engineering Study filed by WISPA, Microsoft and Google conclusively demonstrates the feasibility of coordinated sharing between fixed point-to-multipoint (P2MP) operators and existing earth stations on *every megahertz* of the ongoing FSS band in a majority of rural, Tribal and small town communities where it's most needed. The Reed Study further confirms that coordinated access to unused spectrum in the 3.7-4.2 GHz band can serve as the foundation for high-capacity fixed wireless broadband services in most rural and underserved areas with no harmful interference to incumbent FSS licensees.

The directional nature of *fixed* wireless P2MP permits the local coordination of sectors even where earth stations are in the area, but located outside the beam of the base station and the client device return path. As a result, and despite making very conservative assumptions, the Reed Study demonstrates that *every megahertz* of FSS spectrum can be coordinated for P2MP deployments in 78% of the geographic area of the U.S., where more than 80 million Americans live, without causing harmful interference to incumbent earth stations or TV/radio consumers. The credibility of the Reed Study's finding that receive-only earth stations typically require a 10 kilometer protection radius is reinforced by a subsequent filing showing that "earth station operators in the Los Angeles area have consented to P2MP operations in the adjacent 3650-3700 MHz band at distances as small as 10.3 km."

It's critical to understand that the Reed Study focused on the more challenging and limited option for sharing FSS spectrum: *co-channel* sharing. It did not consider the less challenging scenario of *adjacent channel* sharing, enabled by frequency separation. By making such conservative assumptions (e.g., that all earth stations are operating on every transponder

across the entire 500 megahertz), the Reed study *greatly underestimates* the potential for coordinated P2MP access to C-band to rapidly and affordably narrow the rural digital divide.

Another important implication of the Reed Study's conservative assumption of *co-channel* sharing is that every megahertz of the ongoing FSS portion of the 3.7-4.2 GHz band is currently available today and will continue to be regardless of an earth station repack in the 80 percent of the country where 80 million people live. Because the ability of P2MP operators and FSS earth stations to coordinate sharing is independent of the amount of spectrum the Commission leaves available for FSS operations after repacking, the Commission can move quickly to authorize coordinated *co-channel* deployments, with no worries that a subsequent earth station repack will reduce the spectrum available to fixed wireless operators.

Whether the Commission consolidates FSS earth stations onto 300 megahertz or 130 megahertz, 5G mobile services will not be built out in rural and other less-densely-populated areas for many years. As PISC recommended in its initial Comments, we urge the Commission to authorize P2MP operations to coordinate use of the future 'flexible use' portion of the band on an *opportunistic basis* (e.g., licensed by rule), subject to AFC control and revocable permission to continue operating. PISC also recommends the early certification of an AFC system because it is the most reliable and cost-effective way to facilitate the coordinated use of unused spectrum capacity across the entire 3.7-4.2 GHz band, including on a use-it-or-share-it basis in any lower segments of the band that are immediately reallocated or reserved for flexible use licensing.

Finally, concerning reallocation of the lower portion of the band, PISC strongly agrees with a central premise of the ACA Connects Proposal: The speediest, fairest and most straightforward option consistent with the Commission's statutory authority is a traditional forward auction that consolidates FSS incumbents into the upper portion of the band and requires

auction winners to reimburse incumbents for any eligible and reasonable costs. Unlike a private auction, the courts have consistently upheld the Commission's authority to reorganize bands, to modify licenses, and to authorize mechanisms that require winning bidders to reimburse incumbents' relocation costs.

There is strong precedent to support license conditions that require winning bidders to share the costs of relocating FSS incumbents and to negotiate voluntary and reasonable incentive payments, as needed, to incumbents in exchange for expedited clearance. The FCC also has the authority to appoint an *independent* Transition Facilitator to plan and coordinate the clearing of FSS earth stations from the lower portion of C-band, while compensating FSS incumbents from a clearinghouse or pooled fund that shares the costs of relocation and repacking among winning bidders on a MHz/POP or other fair basis.

**II. THE REED STUDY CONFIRMS THAT EVERY MEGAHERTZ OF THE FSS PORTION OF C-BAND CAN FACILITATE HIGH-SPEED, FIXED WIRELESS BROADBAND IN RURAL AND OTHER AREAS WHERE 80 MILLION AMERICANS RESIDE**

PISC fully supports the Commission’s proposal in the *NPRM* to authorize the coordination of fixed wireless P2MP deployments in ongoing FSS spectrum in the upper portion of the band. The Commission should go further to address the rural digital divide by also authorizing coordinated sharing on an opportunistic basis in locally-unused portions of the future flexible-use portions of the band. The Reed Engineering Study filed by WISPA, Microsoft and Google conclusively demonstrates the feasibility of coordinated sharing between fixed point-to-multipoint (P2MP) operators and existing earth stations on *every megahertz* of the ongoing FSS band in a majority of rural, Tribal and small town communities where it’s most needed.

**A. The Reed Study Shows Geographic Separation and Directional Antennas Enable the Coordination of Co-Channel Sharing for P2MP Deployments Across All FSS Spectrum**

As PISC stated in our initial comments and reply comments, our coalition fully supports the Commission’s proposal in the *NPRM* to authorize the coordination of fixed wireless P2MP deployments in ongoing FSS spectrum in the upper portion of the band.<sup>3</sup> The feasibility of coordinated sharing between fixed P2MP operators and existing earth stations on every megahertz of the ongoing FSS band is reinforced by the study conducted by Professor Jeff Reed, the Willis G. Worcester Professor of Electrical and Computer Engineering at Virginia Tech, and filed in the record by WISPA, Microsoft and Google.<sup>4</sup> The Reed Study conclusively

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<sup>3</sup> Comments of the Public Interest Spectrum Coalition, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, FCC 18-91 (October 29, 2019) (“PISC Comments”); Reply Comments of the Public Interest Spectrum Coalition, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122, FCC 18-91 (Dec. 11, 2019).

<sup>4</sup> *Ex Parte* Letter from Wireless Internet Service Providers Association, Microsoft, Google and *Ex Parte* Presentation by Prof. Jeffrey H. Reed et al., “3.7-4.2 GHz FSS and Fixed Wireless Access Co-channel

demonstrates that coordinated access to unused spectrum in the 3.7-4.2 GHz band can serve as the foundation for high-capacity fixed wireless broadband services in most rural and underserved areas with no harmful interference to incumbent FSS licensees.

The directional nature of *fixed* wireless P2MP permits the local coordination of sectors even where earth stations are in the area, but located outside the beam of the base station and the client device return path.<sup>5</sup> As a result, despite making very conservative assumptions (*e.g.*, co-channel sharing, generalized propagation modeling, high CPE height) the Reed Study demonstrates that *every megahertz* of FSS spectrum can be coordinated for P2MP deployments in 78% of the geographic area of the U.S., where more than 80 million Americans live, without causing harmful interference to incumbent earth stations or TV/radio consumers.<sup>6</sup> The study finds that “P2MP systems can operate co-channel with all existing C-band earth stations (including the ~14,000 additional earth stations that were recently registered), without causing harmful interference.”<sup>7</sup>

The credibility of the Reed Study’s finding that receive-only earth stations typically require a 10 kilometer protection radius is reinforced by a subsequent filing that shows “earth station operators in the Los Angeles area have consented to P2MP operations in the adjacent

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Coexistence Study,” GN Docket No. 18-122 (July 15, 2019) (“Reed Study” and “WISPA, Microsoft, Google Ex Parte”), available at <https://tinyurl.com/yxejzq84>.

<sup>5</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://tinyurl.com/y3gix9cu>.

<sup>6</sup> WISPA, Microsoft, Google Ex Parte Letter at 3. (“The study utilizes conservative assumptions. In addition to the assumption of co-channel operations and the protection of all earth stations currently in IBFS regardless of protection status, the study includes additional conservative assumptions. These include, but are not limited to, a propagation model that takes clutter and terrain into account on a statistical basis rather than the use of actual buildings, trees, berms, hills, and mountains that afford greater protection; using a height for Customer Premise Equipment (CPE) of 7-10 m, which exceeds typical CPE height of ~5-7 m for actual installations; and assuming 100% duty cycle of P2MP transmissions in both directions.”).

<sup>7</sup> *Id.* at 2.



3650-3700 MHz band at distances as small as 10.3 km.”<sup>8</sup> The filing notes that whereas these 10 km separation distances had to be negotiated, “automated frequency coordination would eliminate the transactional costs that 3650-3700 MHz licensees expend to negotiate consent to operate within the extremely large [protection] zones” currently required.<sup>9</sup>

PISC agrees that the Reed Study demonstrates that the Commission should have no concern about harmful interference to existing earth stations in these coordination zones provided that a modernized version of Part 101 frequency coordination is required, as it has been for decades in bands shared between the Fixed Service (FS) and FSS. “This is the result of employing reasonably-sized exclusion zones surrounding earth stations, combined with siting and pointing of P2MP nodes such that no signals exceeding Commission-declared interference criteria are received at any FSS earth station.”<sup>10</sup> A strict coordination requirement would eliminate any risk of harmful interference from P2MP to FSS earth stations, a concern that is already mitigated by the static nature of FSS and the very directional nature of P2MP fixed wireless operations.

PISC strongly agrees with Starry’s observation that authorizing P2MP access to the band on a coordinated basis is “not a binary question.”<sup>11</sup> As Starry stated in its Comments:

There should be no basis on which the Commission should conclude that the band cannot be shared between FSS and fixed point-to-multipoint operations. This is not a binary question. Instead, the question is what is the protection criteria, how does it impact the

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<sup>8</sup> *Ex Parte* Letter from Louis Peraertz, WISPA, and Andrew Clegg, Google, GN Docket 18-122, at 2 (August 6, 2019) (“WISPA/Google *Ex Parte*”). The Reed Study notes that the 10 km range is based on a statistical average and is intended for estimating aggregate national coverage. In practice, each P2MP system would be designed and coordinated on a site-specific basis, taking all surrounding earth stations into account, and fully protecting those operations. *Ibid.*

<sup>9</sup> *Ibid.*

<sup>10</sup> WISPA, Microsoft, Google *Ex Parte* Letter at 2.

<sup>11</sup> Comments of Starry Inc., *Expanding Flexible Use of the 3.7 to 4.2 GHz Band, Order and Notice of Proposed Rulemaking*, GN Docket No. 18-122, at 8, n. 23 (Oct. 29, 2018).

utility for fixed, and what tools can be leveraged to mitigate interference (technical or financial).<sup>12</sup>

Coordinated sharing between fixed P2MP operations and FSS earth stations is fundamentally no different than the coordinated sharing between fixed point-to-point operations and FSS operations that has been managed under Part 101 of the Commission's rules for many years. The only substantial difference is that a P2MP operator would need to coordinate multiple fixed link paths within a defined sector rather than just a single fixed link path. As the Dynamic Spectrum Alliance explained:

The directional nature of fixed point-to-multipoint radios permits the coordination of sectors even where earth stations are in the same geographic area but located outside the beam of the base station and the client device return path. The arc of the sector can be variable and based on antenna beamwidth, as adjusted to conform to the arc that could be successfully coordinated.<sup>13</sup>

It's critical to understand that the Reed study focused on the more challenging and limited option for sharing FSS spectrum: *co-channel* sharing. It did not consider the less challenging scenario of *adjacent channel* sharing, enabled by frequency separation. By making such conservative assumptions (e.g., that all earth stations are operating on every transponder across the entire 500 megahertz), the Reed study *greatly underestimates* the potential for coordinated P2MP access to C-band to rapidly and affordably narrow the rural digital divide.

Another important implication of the Reed Study's conservative assumption of *co-channel* sharing is that every megahertz of the ongoing FSS portion of the 3.7-4.2 GHz band is currently available today and will continue to be regardless of an earth station repack in the 80 percent of the country where 80 million people live. Because the ability of P2MP operators and

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<sup>12</sup> *Ibid.*

<sup>13</sup> Comments of Dynamic Spectrum Alliance, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band, Order and Notice of Proposed Rulemaking*, GN Docket No. 18-122, at 8 (Oct. 29, 2018).

FSS earth stations to share C-band spectrum is independent of the amount of spectrum the Commission leaves available for FSS operations in any repacking process, the Commission can move quickly with its proposal to redefine the Fixed Service as P2MP, and authorize coordinated *co-channel* deployments, with no worries that a subsequent earth station repack will reduce the spectrum available to fixed wireless operators. As the study states:

Assuming a conservative overall average of 4 bits/second/hertz spectral efficiency, 300 megahertz of C-band spectrum would allow gross throughput rates of approximately 1.2 gigabits per second for P2MP systems. . . . some six times greater than the maximum amount of spectrum currently available for wireless ISPs in the 3.65 GHz band today, and twice as much spectrum than is available in the entire CBRS band.<sup>14</sup>

It will be impossible to quantify the additional areas across the country – and the overall amount of unused spectrum in the ongoing FSS band – that are possible from *both* co-channel and adjacent-channel coordination until the Commission decides how much of the band will be cleared of FSS incumbents and repurposed for flexible-use licensing. However, based on the fact that the C-Band Alliance has proposed that a 20 megahertz guard band is sufficient to safely separate high-power mobile IMT from FSS earth stations – and considering that the vast majority of earth stations are receiving on a single 36 megahertz transponder – it seems virtually certain that *frequency separation* can further expand on both the potential coverage and the capacity of fixed wireless P2MP deployments that can be coordinated with FSS earth stations. Because as many as 90 percent of earth stations operate on only a single transponder (36 megahertz), frequency separation can unlock a similar amount of spectral capacity for P2MP in many of the rural, underserved and other communities that are within the 20 percent of the U.S. where co-channel coordination is infeasible.

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<sup>14</sup> WISPA, Microsoft, Google Ex Parte at 2.

Finally, because Part 101 coordination is already well-established in this band, there is no need to require or wait for the development of an automated frequency coordination system (AFC). Although an AFC can speed deployments and lower costs, nothing as complex as the Spectrum Access System (SAS) that will soon manage coexistence between earth stations and both mobile and fixed P2MP deployments in the neighboring CBRS band would be needed in the 3.7-4.2 GHz C-band. Unlike the 3.5 GHz band, which has mobile incumbents (U.S. Navy ships) and entrants (mobile terrestrial networks), both FSS and P2MP deployments are entirely static. Interference calculations to protect FSS incumbents in the C-band are particularly straightforward because the locations of both earth stations and P2MP deployments would be geographically fixed and their operational parameters well-characterized. A database with up-to-date IBFS location and operational data can quickly and inexpensively verify the coordination of any transmit point – including individual client locations – within the sector initially coordinated by a P2MP operator. The ability to quickly and inexpensively coordinate unused spectrum to serve a group of homes or scattered sites on a hillside, for example, is particularly promising in rural areas where earth stations are both less numerous and more widely dispersed.<sup>15</sup>

#### **B. Automated Frequency Coordination Can Facilitate Opportunistic Access to Unused Flexible Use Spectrum Across the Entire 3.7 GHz Band**

Whether the Commission consolidates FSS incumbents onto 300 megahertz or 130 megahertz, 5G mobile services will not be built out in rural and other less-densely-populated areas for many years. PISC recommended in its initial Comments that the Commission authorize P2MP operations to coordinate use of the future ‘flexible use’ portion of the band on an

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<sup>15</sup> Based on matching registered earth station locations reported in IBFS with the National Land Cover Database, Google found that “approximately half of the FSS 4 sites are in urban areas, one-third are in rural areas, and 17% are in suburban areas.” Comments of Google LLC and Alphabet Access, *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, GN Docket 17-183, at 8 (Oct. 2, 2017).

*opportunistic basis* (e.g., licensed by rule), subject to AFC control and revocable permission to continue operating.<sup>16</sup> PISC also recommends the early certification of an AFC system because it is the most reliable and cost-effective way to facilitate the coordinated use of unused spectrum capacity across the entire 3.7 GHz band, including on a use-it-or-share-it basis in any lower segments of the band that are immediately reallocated or reserved for flexible use licensing.<sup>17</sup>

Under the reallocation framework described in the *NPRM*, there will be at least two and possibly three separate band segments that can be utilized on either a licensed or opportunistic basis for high-capacity fixed wireless P2MP. PISC urges the Commission to take advantage of the capabilities of an AFC system to authorize either licensed (Part 101) or at least opportunistic (use-it-or-share-it) access to P2MP across all three band segments.

**Upper Ongoing FSS Segment:** Whatever portion of the band that will remain in use for FSS should be authorized for *licensed* point-to-multipoint use. P2MP operators should be authorized immediately to coordinate use under an expedited Part 101 process – and ultimately through an AFC system – and acquire interference protection rights on a first-in basis. This certainty for at least a portion of the spectrum used to serve rural and other underserved areas will help smaller providers to attract investment capital and to leverage opportunistic access to additional spectrum, both lower in the 3.7 GHz band and in the adjacent CBRS band (General Authorized Access, or GAA, spectrum).

**Lower Flexible-Use Segment:** Whether the Commission relies on a private or public auction, a substantial portion of the band above 3.7 GHz will be cleared of FSS incumbents and reallocated to flexible use licensing. However, licensing and the ultimate buildout of 5G carrier networks across most rural and other less densely populated areas will take many years – and

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<sup>16</sup> PISC Comments at 17-21.

<sup>17</sup> See *Automated Frequency Coordination: An Established Tool for Modern Spectrum Management*, Dynamic Spectrum Alliance (March 2019), available <https://tinyurl.com/y5rudf9m>.

potentially far longer than the initial license terms if buildout requirements are significantly less than 100 percent of the population. During this period, the same AFC system that can facilitate faster, more efficient and lower cost coordination between P2MP and FSS in the upper segment of the band can be used to allow opportunistic access, on a temporary basis, to vacant lower band frequencies until the future licensee commences service.

With the benefit of a geolocation database (AFC), the Commission can once again adopt the same “use it or share it” approach that it has already adopted for GAA use of vacant Priority Access License (PAL) spectrum (in CBRS) and for unlicensed use of locally-vacant flexible use spectrum in the post-incentive-auction 600 MHz band. Like the CBRS Spectrum Access System, an AFC system certified for C-band can ensure that unused spectrum can be put to use in rural and other hard-to-serve areas without any risk of interference or any negative impact whatsoever on the primary licensee that has not yet built out.

P2MP access points that are deployed opportunistically can be required to query the database periodically to determine whether any new or deleted earth station registrations, or other changes, revoke the permission to operate or require a change in the transmit power or other operational condition.

**Any Middle/Reserved Segment:** If the Commission decides that FSS will be cleared from the bottom of the band in two stages – with FSS continuing to operate in a portion of the band that is designated for future reallocation to flexible use (e.g., 3800-3900 MHz) – PISC recommends that this middle segment should similarly be authorized for *opportunistic* (e.g., licensed by rule) coordination between P2MP and the remaining FSS incumbents. The coordination process would be no different than in the upper band segment, except that – as in the lower segment – the AFC system would be able to revoke the permission to operate, or

require a change in operating conditions, as needed to protect and ultimately transition from FSS to the deployments of a future flexible use licensee.

Opportunistic access controlled by an automated AFC database would empower a wide variety of small and alternative providers to use fallow spectrum in local areas to provide high-speed broadband and other services, while retaining the licensee's right to exclusive use of that spectrum whenever the carrier commences service with its own operations in the licensed band.<sup>18</sup> Unleashing opportunistic, shared access to fallow spectrum creates a general incentive for post-auction licensees to build out services more quickly, or to make greater efforts to partition or lease, since opportunistic use of the band will demonstrate that other (typically smaller) operators are finding value in the unused portions of their license area. This will reduce spectrum warehousing and increase access to operators that are ready to deploy, but who lack spectrum access in a local area.

### **C. European and Canadian Regulators are Authorizing Coordinated Sharing in C-Band to Likewise Make Unused FSS Spectrum Available for Localized Use**

Since the C-band is both harmonized – and grossly underutilized – across Europe and North America, the Commission is not the only regulator that has proposed to authorize coordinated shared use of the FSS band for localized terrestrial broadband deployments. The United Kingdom recently adopted an order authorizing coordinated shared use for fixed and mobile broadband, while Canada and Germany have proceedings proposing a similar outcome. In these countries the FSS band under consideration is 3800-4200 MHz, since the 3400-3800 MHz band has already been designated (and in many cases already auctioned) for IMT.

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<sup>18</sup> See generally Michael A. Calabrese, "Use it or Share it: Unlocking the Vast Wasteland of Fallow Spectrum," New America Foundation, presented at 39<sup>th</sup> Research Conference on Communication, Information and Information Policy (TPRC) (Sep. 23, 2011).

For example, last month the UK’s regulator, Ofcom, released a new licensing framework to allow non-national ISPs and individual enterprises to access unused 3.8-4.2 GHz FSS spectrum on a local, “first-come, first-served, Ofcom-coordinated basis.”<sup>19</sup> Ofcom’s goal is to “support innovation and enable new uses of spectrum ... to develop solutions to meet local wireless connectivity needs.”<sup>20</sup> Ofcom included several bands in its new sharing framework, but the 3.8-4.2 GHz FSS band is by far the largest and most valuable. In its Statement, Ofcom also adopted a broader “use it or share it” policy to encourage use of exclusively-licensed mobile carrier spectrum in areas where it is not in use and a local user seeks access.<sup>21</sup>

In its July 25<sup>th</sup> Statement, Ofcom explained the rationale for what it calls “Shared Access” licensing in the 3.8 GHz band, stating: “Local access to these bands could support growth and innovation across a range of sectors, such as manufacturing, enterprise, logistics, agriculture, mining and health. It could enable organisations to set up their own local networks with greater control over security, resilience and reliability than they may have currently.”<sup>22</sup> The new rules allow applicants to acquire either a low-power (max EIRP 24 dBm) or a medium-power (max EIRP 42 dBm) Shared Access licenses, with the latter limited to “rural” areas.<sup>23</sup>

Ofcom determined that it is able to coordinate shared, localized use of 3800-4200 MHz for terrestrial broadband while protecting incumbent FSS providers. Much like Commissioner O’Rielly’s recent declaration that “we no longer have the luxury of over-protecting

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<sup>19</sup> Ofcom, “Enabling Wireless Innovation Through Local Licensing,” at 60 (July 25, 2019), [https://www.ofcom.org.uk/\\_\\_data/assets/pdf\\_file/0033/157884/enabling-wireless-innovation-through-local-licensing.pdf](https://www.ofcom.org.uk/__data/assets/pdf_file/0033/157884/enabling-wireless-innovation-through-local-licensing.pdf) (“Ofcom Statement”). Ofcom also noted that in 2017 it had “confirmed our plans to clear existing earth station use from the 3.6-3.8 GHz band in October 2017, and users have until June 2020 to make alternative plans for themselves.” *Id.* at 16. The UK provided no incentive payments to FSS incumbents removed from the band.

<sup>20</sup> *Id.* at 1.

<sup>21</sup> *Id.* at 64, et seq. (section 4: “Access to Licensed Mobile Spectrum”).

<sup>22</sup> *Id.* at 1.

<sup>23</sup> *Id.* at 60.



incumbents,”<sup>24</sup> Ofcom states: “There are growing and competing demands on the spectrum used by earth stations from other services which can also deliver a range of benefits. We consider that spectrum sharing could allow a broader range of services to operate to support growth in both areas.”<sup>25</sup> Ofcom also determined that by requiring coordination and allowing incumbents to object, the agency did not anticipate FSS incumbents would experience “undue interference.”<sup>26</sup> And if harmful interference occurs, “the terms and conditions of the Shared Access license . . . include provisions that enable Ofcom to inspect licensees’ equipment and force closedown of users’ equipment if this is causing interference.”<sup>27</sup>

Last year Canada’s regulator – Innovation, Science and Economic Development Canada (ISED) – similarly initiated a consultation requesting “comments on whether exclusion zones should be considered for the placement of these TVRO [earth] stations, cable head ends and other fixed or FSS operations [earth stations] . . . [i]n order to maximize the use of this [3800-4200 MHz] band.”<sup>28</sup> In June 2019, based on those comments, the agency published its decision that “ISED will launch a future consultation on . . . the potential for implementing a SAS or similar database and technical and policy considerations to optimize the use of the 3700-4200 MHz bands.”<sup>29</sup>

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<sup>24</sup> FCC Commissioner Michael O’Rielly, Speech to Wi-Fi Alliance, Washington DC (June 4, 2019).

<sup>25</sup> Ofcom Statement at 15 (“[N]ew users would access spectrum under a similar coordination approach as for existing users in the 3.8-4.2 GHz band. We noted that expanding access to new users may reduce the amount of spectrum available for incumbent users to expand their services in some locations. However, we did not consider that the impact on incumbent users was likely to be significant.”).

<sup>26</sup> *Id.* at 15.

<sup>27</sup> *Id.* at 59-60.

<sup>28</sup> Innovation, Science and Economic Development Canada (ISED), *Consultation on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Consultation on Changes to the 3800 MHz Band*, at ¶¶ 91-97 (June 2018), available at <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11401.html#s7.1>.

<sup>29</sup> ISED, *Decision on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Decisions on Changes to the 3800 MHz Band*, Decision 17, ¶¶ 100-14 (June 2019), available at <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11437.html>.

### III. ACCESS TO UNUSED C-BAND SPECTRUM CAN IMMEDIATELY ADDRESS THE BROADBAND DIGITAL DIVIDE IN RURAL AND OTHER LESS DENSELY-POPULATED AREAS

As PISC and numerous parties have stated in the record of this proceeding, unused spectrum in the 3.7 GHz band provides a unique opportunity for the Commission to provide immediate relief to rural areas that struggle on the wrong side of the digital divide.<sup>30</sup> Rural, tribal and small town America lacks access to high-speed broadband at much higher rates than their counterparts in urban and suburban areas. This lack of access contributes to a growing gap between the vibrancy of local economies in rural areas compared to urban and suburban areas. Connectivity can impact social cohesion as well. Studies show both people and economic activity is moving out of rural areas lacking high-speed and affordable broadband.

The Commission's 2019 Broadband Deployment Report reported that more than 26 percent of rural Americans live in a census tract where no internet service provider offers a fixed terrestrial broadband service at speeds of 25/3 Mbps or better, whereas only 1.7% of the urban population lacks at least one provider offering 25/3 Mbps service.<sup>31</sup> In Tribal lands 32% lack high-speed coverage. Nationwide more than 21 million Americans lack access to fixed terrestrial broadband at 25/3 Mbps.<sup>32</sup> Because of the limitations of Form 477 reporting, this data also substantially understates the degree to which rural Americans lack access to high-speed broadband.<sup>33</sup>

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<sup>30</sup> See PISC Comments at 5-12.

<sup>31</sup> FCC, 2019 Broadband Deployment Report, GN Docket No. 18-238, ¶ 33, Figure 1 (May 29, 2019) (“2019 Broadband Deployment Report”).

<sup>32</sup> *Ibid.*

<sup>33</sup> *Id.*, 738, n. 261 (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). See also 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

The availability gap in less populated areas is reflected in the persistent broadband *adoption gap* between Americans in rural and urban areas. “Rural Americans are now 12 percentage points less likely than Americans overall to have home broadband,” according to a recent Pew Research Center update.<sup>34</sup> Even in rural areas where high-speed broadband has been deployed, consumers are less likely to have a choice among competing providers and typically pay more money for worse service.<sup>35</sup> A major obstacle is the cost of deployment, as fiber and other wireline technologies can be five-to-seven times or more costly and far slower to deploy in less densely-populated or topographically-challenging areas. More mid-band spectrum for point-to-multipoint (P2MP) fixed wireless, on the other hand, can serve as the public infrastructure that enables high-speed broadband in targeted, hard-to-reach rural areas at a fraction of the cost of fiber and other wireline technologies.

There is little question that the higher cost of deployment in rural areas deters adoption. Recently, the North Carolina Broadband Infrastructure office found for the 67% of households that didn’t have broadband access at home, cost was cited as the number one reason.<sup>36</sup> According to the Pew Research Center (June 13), only 56 % of U.S. adults making less than \$30,000 annually said they have broadband access at home, compared to 92% of those making \$75,000 annually or more.<sup>37</sup>

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criteria could ‘somewhat overstate deployment,’ adding that census blocks are typically larger in rural areas.”).

<sup>34</sup> Andrew Perrini, “Digital Gap Between Rural and Nonrural America Persists,” Pew Research Center, FactTank (May 31, 2019), available <https://tinyurl.com/y3p9u8ew>.

<sup>35</sup> Sharon Stover, “Reaching rural America with broadband internet service,” *The Conversation* (Jan. 16, 2018), <http://theconversation.com/reaching-rural-america-with-broadband-internet-service-82488> (“Rural residents have few choices of internet service providers – or none at all. They pay higher prices for lower quality service, despite earning less than urban dwellers.”).

<sup>36</sup> Mandy Mitchell, “State is Stepping in to Help Bridge the Digital Homework Gap,” WRAL.com (May 19, 2019), available <https://www.wral.com/state-is-stepping-in-to-help-bridge-the-digital-homework-gap/18389163/>.

<sup>37</sup> Monica Anderson, “Mobile Technology and Home Broadband 2019,” Pew Research Center (June 13, 2019), available <https://tinyurl.com/y46fhz0l>.

Rural Americans' lack of high-speed broadband access brings wide-ranging harms, both economically and socially. Rural Americans without fixed broadband at home are left at a disadvantage in relation to the modern workplace, educational system, access to online government services and many entertainment options. Nearly a quarter (24%) of rural Americans surveyed by the Pew Research Center survey said that access to high-speed broadband is a "major problem" in their local community, while only 9% of suburban Americans and 13% of urban Americans said the same.<sup>38</sup> This lack of access also deepens the "Homework Gap" that leaves unconnected students with fewer resources for their educations. According to a Government Accountability Office analysis of Census Bureau data, 48% of school-age children living in households where the annual income is less than \$25,000 do not use internet at home.<sup>39</sup>

The ability to coordinate mid-band spectrum use for P2MP fixed wireless allows smaller, local companies to serve their communities when larger companies have failed to deploy services. The high costs of trenching or hanging fiber and other wireline technologies in rural areas often leads ISPs, especially larger companies, to see no business case for deploying in areas with low population density or low socioeconomic status. Fixed wireless provides a more cost-effective method of deploying high-speed broadband to specific, hard-to-serve rural areas.

As Jeff Kohler, the co-founder of Rise Broadband, the nation's largest WISP, has argued, the deployment cost of P2MP fixed broadband per subscriber is roughly \$250, which is less than a fifth of the cost of fiber.<sup>40</sup> Fixed wireless is a lower cost option because it avoids the need to

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<sup>38</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), available <https://tinyurl.com/y58hduuz>.

<sup>39</sup> "FCC Should Assess Making Off-School-Premises Access Eligible for Additional Federal Support," Government Accountability Office (July 2019), at 5, Figure 1, <https://www.gao.gov/assets/710/700629.pdf>.

<sup>40</sup> Sarah Barry James, "Fixed wireless to shine in 2018 thanks to 5G, cost savings," *S&P Market Intelligence* (April 6, 2018), <https://platform.mi.spglobal.com/web/client?auth=inherit#news/article?id=44144018&cdid=A-44144018->

dig up the streets or bury fiber in hilly, forested or other rough terrain, a reality reflected in economic studies of deployment costs.<sup>41</sup> “This efficiency and cost-effectiveness would enable C-band spectrum to be used for Connect America Fund and Rural Development Opportunity Fund deployments at lower cost to the Universal Service Fund, enabling more locations to be served with finite support funds.”<sup>42</sup> And lower deployment costs, in turn, will tend to make high-speed broadband more affordable for the customers in rural and lower-income areas, an important consideration since higher prices are a significant barrier to adoption in rural American.<sup>43</sup>

#### **IV. THE ACA CONNECTS PROPOSAL, UNLIKE A PRIVATE AUCTION PROPOSAL, COULD BE SHAPED TO ALIGN WITH THE COMMISSION’S LEGAL AUTHORITY AND PRECEDENT**

PISC strongly agrees with a central premise of the ACA Connects Proposal: The speediest, fairest and most straightforward option consistent with the Commission’s statutory authority is a traditional forward auction that consolidates FSS incumbents into the upper portion of the band and requires auction winners to reimburse incumbents for any eligible and reasonable costs. Unlike a private auction, the courts have consistently upheld the Commission’s authority to reorganize bands, to modify licenses, and to authorize mechanisms that require new licensees to reimburse relocated incumbents’ costs.

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13616. "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." *Ibid*.

<sup>41</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> (“Fixed wireless has a much lower upfront cost to build than fiber. This lower cost makes reaching certain locations more economically feasible.”).

<sup>42</sup> WISPA/Google Ex Parte, *supra* note 8, at 2.

<sup>43</sup> Edward Carlson and Justin Goss, “The State of the Urban/Rural Digital Divide,” National Telecommunications and Information Administration Blog (Aug. 10, 2016), <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.”).

There is strong precedent to support license conditions that require winning bidders to share the costs of relocating FSS incumbents and to negotiate voluntary and reasonable incentive payments, as needed, to incumbents in exchange for expedited clearance.<sup>44</sup> The Commission also has the authority to appoint an *independent* Transition Facilitator to plan and coordinate the clearing of FSS earth stations from the lower portion of C-band, while compensating FSS incumbents from a clearinghouse or pooled fund that shares the costs of relocation and repacking among winning bidders on a MHz/POP or other fair basis.<sup>45</sup>

PISC and OTI, together with a diverse array of industry parties, have shown that a private auction or sale would clearly violate Section 309(j) of the Communications Act and ignore Congressional intent and precedent.<sup>46</sup> Only a public auction run by the Commission can ensure a monetary return to the public and avoid unjust enrichment. The Commission has no legal authority to authorize, let alone oversee, a private auction, nor to dole out incentive payments that reduce the return to the public except as authorized under Section 309(j). General provisions such as Sections 303(c), 303(r) and 4(i) cannot possibly provide the authority for a public or private auction that is not consistent with the explicit provisions of Section 309(j).<sup>47</sup>

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<sup>44</sup> See Comments of the Open Technology Institute at New America, Public Notice, GN Docket No. 18-122, at 15-17 (July 3, 2019) (“OTI Public Notice Comments”).

<sup>45</sup> See Ex Parte Letter from Michael Calabrese, Open Technology Institute, *Expanding Flexible Use of the 3.7 GHz Band*, GN Docket No. 18-122 (July 19, 2019) (“OTI Ex Parte”).

<sup>46</sup> See, e.g., Comments of the Public Interest Spectrum Coalition, GN Docket No. 18-122, at 22-31 (Oct. 29, 2018) (“PISC Comments”); OTI Public Notice Comments at 6-13; *Ex Parte* Letter from Elizabeth Andron, Charter Communications, GN Docket No. 18-122 (Feb. 22, 2019); Comments of T-Mobile, GN Docket No. 18-122, at 3 (Oct. 29, 2018); DSA Comments, GN Docket No. 18-122, at 15-19 (Oct. 29, 2018); Comments of Comcast, GN Docket No. 18-122, at 23-32 (Oct. 29, 2018); Comments of Google, GN Docket No. 18-122, at 10-15 (Oct. 29, 2018); Comments of American Cable Association, GN Docket No. 18-122, at 15 (Oct. 29, 2018); Comments of Microsoft, GN Docket No. 18-122, at 11 (Oct. 29, 2018).

<sup>47</sup> See OTI Public Notice Comments, *supra* note 44, at 10-12. A basic canon of statutory construction provides that no general provision can supersede the very specific authority and mandates that Congress spelled out in great detail in Section 309(j). See, e.g., Antonin Scalia and Bryan A. Gardner, *Reading the Law: The Interpretation of Legal Texts* (West, 2012).

Like the ACA Connects Proposal, PISC’s proposal – also summarized in the recent letter from four broad-based coalitions to Congressional leadership<sup>48</sup> – is that the most straightforward option consistent with the Commission’s statutory authority is a traditional public auction coupled with a clearing/transition fund. Rather than a novel, opaque, and unlawful private auction, the Commission has clear authority to rapidly authorize a traditional clock auction that consolidates FSS incumbents into the upper portion of the band, that requires auction winners to reimburse incumbents for any eligible and reasonable costs, and that modifies FSS space station licenses and earth station registrations accordingly.

PISC agrees with the ACA Connects Proposal that the repacking or relocation costs of FSS incumbents (including any fiber substitution for earth stations) should be reimbursed from auction proceeds. PISC further agrees with the ACA Connects Proposal that “[a]ll costs related to the transition [could] be advanced (subject to a true-up) from a fund that would be funded by the winning bidders.”<sup>49</sup> At the same time, PISC believes it is important for the Commission to define eligible and reasonable reimbursements costs that will, however indirectly, impact the cost of spectrum to bidders and the ultimate return of net revenues to the American people.

One gap in the ACA Connects Proposal is the need for and control over an entity to study, plan, budget, and implement the transition of FSS incumbents away from whatever portion of the band is cleared for reallocation and auction. PISC proposes that the Commission should appoint an *Independent* Transition Facilitator with a duty to collectively represent the winning bidders prior to an auction, as well as to protect earth stations that will need to be returned or replaced. An Independent Transition Facilitator (ITF) can – in the period leading up to

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<sup>48</sup> Letter from Public Interest Spectrum Coalition, Dynamic Spectrum Alliance, Broadband Connects America Coalition, and Schools, Health, Libraries Broadband Coalition to the chairs and ranking members of Senate Commerce and House Energy & Commerce Committees (July 9, 2019), available <https://tinyurl.com/y3huz8zr>.

<sup>49</sup> ACA Connects Proposal at 5.

a 2020 auction – submit a Transition Plan that estimates the post-auction costs that will be shared by winning bidders (on, for example, a MHz/pop basis). This is consistent with the ACA Connects Proposal, which suggests that the reimbursement fund should be “funded at 130% of estimated costs. Earth station users and satellite operators would file reimbursement claims with a fund administrator.”<sup>50</sup>

The courts have consistently upheld the Commission’s authority to reorganize bands, modify licenses, and authorize mechanisms that reimburse incumbents’ costs. In the past, when the Commission addressed similar opportunities to consolidate or relocate incumbents in an underutilized band, it relied on a traditional auction (where needed) and required winning bidders or other entrants to assume the cost of relocating incumbents whose licenses are modified to ensure “comparable facilities” on different frequencies. There is strong precedent from multiple prior proceedings to support license conditions that require winning bidders to shoulder the costs of relocating FSS incumbents and to *voluntarily* negotiate reasonable premium payments to incumbents, as needed, in exchange for expedited clearance.

One example, described in OTI’s Public Notice Comments,<sup>51</sup> is the framework the Commission adopted when it subdivided the 18 GHz band which, like C-band, was occupied on a co-primary basis by FSS and FS users.<sup>52</sup> More recently the Commission established rules in 2006, in relation the AWS-3 auction, that required compensation for relocated Fixed Service and Broadband Radio Service incumbents through a clearinghouse paid for by new Advanced

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<sup>50</sup> *Ibid.*

<sup>51</sup> See OTI Public Notice Comments at 15-17.

<sup>52</sup> *Redesignation of the 17,7-19.7 GHz Frequency Band, Blanket Licensing of Satellite, etc.*, Report and Order, IB Docket No. 98-172 (rel. June 22, 2000). See *Teledesic LLC v. FCC*, 275 F.3d 75, 86 (D.C. Cir. 2001) (upholding FCC authority to require satellite operators to negotiate the payment of relocation costs of FS incumbents moved to the upper portion of the heretofore co-primary 18 GHz band).



Wireless Service licensees.<sup>53</sup> Similarly, in 2013 the Commission required winning bidders in the Upper H Block auction to make proportional payments into a fund previously established to pay the costs of clearing incumbents from the overall H Band.<sup>54</sup> The Report and Order adopted “cost-sharing formulas based on gross winning bids,” stating that “the Commission has long established that cost-sharing obligations for both the Lower H Block and the Upper H Block should be apportioned on a pro rata basis against the relocation costs attributable to the particular band.”<sup>55</sup>

All of these precedents – and others – support the Commission’s well-established approach of combining a public auction with licensing conditions that require new licensees to shoulder and fairly share reallocation costs.

PISC strongly disagrees with the suggestion in the ACA Connects Proposal that “the satellite industry receive incentive payments appropriate for the clearing of 200 megahertz of the band,” and that “satellite operators and earth station users would each receive a portion of the incentive payments (over and above ‘make whole’ payments) appropriate for clearing additional C-band frequencies beyond 200 megahertz.”<sup>56</sup> That ACA Connects wants a windfall on top of a publicly-funded fiber network for its members is both beyond the pale and unlawful.

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<sup>53</sup> See *Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile & Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, Ninth Report & Order, 21 FCC Rcd 4473, at 4513-19, 4526-33 (2006); see also 47 C.F.R. §§ 27.1160-27.1174; 47 C.F.R. §§ 27.1176-27.1190; 47 C.F.R. §§ 27.1230-27.1239.

<sup>54</sup> See *Service Rules for Advanced Wireless Services H Block — Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands*, Report and Order, 28 FCC Rcd. 9483, 9546-9550 ¶¶ 167-173 (2013).

<sup>55</sup> *Id.* at ¶¶ 167-168.

<sup>56</sup> ACA Connects Proposal at 6.

With respect to FSS earth stations, OTI explained in its Public Notice Comments why earth stations are ineligible for incentive payments under Section 309(j).<sup>57</sup> Receive-only earth stations that duly register and coordinate with co-primary Fixed Service (FS) licensees obtain a reliance interest in protection against harmful interference, but they do not hold a license under Title III. Consequently, receive-only earth stations possess neither the “station license” necessary to have Title III rights cognizable under Section 316,<sup>58</sup> nor the “licensed spectrum usage rights” necessary to be eligible to receive incentive auction payments authorized by Section 309(j)(8)(G).<sup>59</sup>

With respect to licensed FSS satellite operators, the Commission’s only legal basis for awarding “incentive payments” over and above “make whole” cost reimbursements would be a bona fide incentive auction that complies with Section 309(j)(8)(G). A variation of the proposal the Commission outlined in the *NPRM* for a competitive reverse auction of transponder capacity<sup>60</sup> is an example that could fit well with the ACA Connects Proposal, inasmuch as it envisions clearing and auctioning 370 megahertz, which would presumably require satellite operators to divest some portion of their current in-use capacity and C-band business revenue. The ACA Connects Proposal describes a reverse auction conceptually parallel to the TV incentive auction that concluded in 2017, since satellite operators with U.S.-based revenue would be bidding to accept a payment to voluntarily discontinue transmissions on certain transponders:

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<sup>57</sup> See OTI Public Notice Comments at 17-21; *accord* Comments of WISPA, Public Notice, GN Docket 18-122, at 3-5 (July 3, 2019); Comments of Dynamic Spectrum Alliance, Public Notice, GN Docket 18-122, at 12-15 (July 3, 2019); Comments of Satellite Industry Assn., Public Notice, GN Docket 18-122, at 7 (July 3, 2019).

<sup>58</sup> 47 U.S. Code § 316.

<sup>59</sup> 47 U.S. Code § 309(j)(8)(G).

<sup>60</sup> *NPRM* at ¶ 106 (seeking comment on “a reverse auction for satellite transponder capacity that could be used to compensate the satellite incumbents for giving up C-band transponder capacity in order to enable the Commission to reallocate C-band spectrum to flexible use.”).

We recommend that the incentive auction be national, and satellite operators be invited to tender their national shares of in-orbit satellite capacity at progressively declining prices (a reverse auction). A satellite operator willing to tender satellite capacity for refarming at a certain price would have to lease capacity on its satellites to an operator not willing to surrender satellite capacity at that price, as necessary to preserve the latter operator's total satellite capacity.<sup>61</sup>

Alternatively, the Commission also has legal authority to allow winning bidders in the public auction to make voluntary incentive payments. While the Commission has authorized winning bidders to negotiate premium payments to incumbents willing to vacate early, it has never authorized private windfalls at public expense.

An example is the framework the Commission adopted when it subdivided the 18 GHz band.<sup>62</sup> Under the Commission's two-stage framework, during an initial two-year period FS licensees were allowed to demand a premium to relocate early, but part of the enforceable "good faith" requirement was that the premium had to be proportionate to the cost of comparable facilities. If no agreement was reached within two years, the Commission authorized satellite entrants to force the involuntary relocation of FS incumbents at any time (as needed), with satellite users required to pay actual costs for relocation up to ten years after the Order. After ten years any remaining FS incumbents were required to relocate without any cost reimbursement.<sup>63</sup> No gratuitous incentive payments were ordered by the Commission. And although Teledesic LLC challenged the Commission's authority to condition the new licenses on an obligation to

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<sup>61</sup> ACA Connects Proposal at 6.

<sup>62</sup> *Redesignation of the 17,7-19.7 GHz Frequency Band, Blanket Licensing of Satellite, etc.*, Report and Order, IB Docket No. 98-172 (rel. June 22, 2000).

<sup>63</sup> *Id.* at ¶ 5.

pay the costs of displaced FS incumbents, the D.C. Circuit upheld the Commission’s decision, noting that the FCC’s “current approach to the relocation of incumbents is not new.”<sup>64</sup>

## V. CONCLUSION

PISC urges the Commission to take full advantage of this opportunity to ensure that *all 500 megahertz* of today’s grossly underutilized C-band are put to work to boost both America’s 5G future as well as to close the rural broadband divide. The clearing and sharing proposals in the *NPRM* each represent an essential component of a potential win-win-win solution that achieves three vital public interest outcomes: more flexible-use spectrum for 5G together with billions in auction revenue to the Treasury; coordinated access to unused mid-band spectrum to fuel more affordable, high-capacity fixed wireless deployments in rural and underserved areas; and both full cost reimbursements and protection from harmful interference for existing FSS incumbents.

Respectfully submitted,

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<sup>64</sup> *Teledesic LLC v. FCC*, 275 F.3d 75, 86 (D.C. Cir. 2001) (upholding FCC authority to require satellite operators to negotiate the payment of relocation costs of FS incumbents moved to the upper portion of the heretofore co-primary 18 GHz band).