

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

|   |   |                      |
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| In the Matter of  | ) |                      |
|   | ) |                      |
| Expanding Flexible Use of the 3.7 to 4.2 GHz Band   | ) | GN Docket No. 18-122 |
|   | ) |                      |
| Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz  | ) | GN Docket No. 17-183 |
|   | ) |                      |
| Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission’s Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3.7-4.2 GHz Band | ) | RM-11791             |
|   | ) |                      |
| Fixed Wireless Communications Coalition, Inc., Request for Modified Coordination Procedures in Band Shared Between the Fixed Service and the Fixed Satellite Service  | ) | RM-11778             |

**COMMENTS OF ITIF**

The Information Technology and Innovation Foundation (“ITIF”)<sup>1</sup> appreciates this opportunity to comment on the Commission’s proposal to transition additional spectrum for flexible mobile use in the 3.7 to 4.2 GHz band (“C-band downlink” or “C-band”).<sup>2</sup> ITIF supports the “market-based” approach with the belief it is

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<sup>1</sup> The Information Technology and Innovation Foundation (ITIF) is an independent, nonpartisan research and educational institute focusing on the intersection of technological innovation and public policy. Recognized as the world’s leading science and technology think tank, ITIF’s mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress.

<sup>2</sup> Expanding Flexible Use of the 3.7 to 4.2 GHz Band, GN Docket No. 18-122; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, GN Docket No. 17-183; Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission’s Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3.7-4.2 GHz Band, RM-11791; Fixed Wireless Communications Coalition,

best suited to quickly bring this spectrum to market, transition it to more a valuable use, and accelerate U.S. leadership in 5G services, all while preserving the important incumbent uses of the band.

For decades, the United States has gradually liberalized the spectrum licensing process. The successful incentive auction completed in 2017 was the latest example of this increasing reliance on market forces and property-style rights driving discovery of and investment in more valuable uses of spectrum. The market-based approach utilizing secondary market transactions would be a bold, commendable step forward by the Commission.

Secondary market transactions would quickly incentivize those participants with the best information to decide how much spectrum can be transitioned and at what cost. While ITIF agreed with other commenters that the initial 100 megahertz proposed to be transitioned for flexible mobile terrestrial use was disappointing, satellite operators are now willing to offer up to 200 megahertz, and one could imagine more would be available if demand was sufficient.<sup>3</sup> This amount of spectrum, combined with the speed with which it could be brought to market, justifies the appropriate license modifications necessary to see spectrum trade hands on the secondary market.

## **THE NEED FOR FLEXIBLE-USE MID-BAND SPECTRUM**

The demand for additional wireless broadband service only continues to grow.<sup>4</sup> An additional 200 or 300 megahertz of clean, licensed spectrum would go a long way toward alleviating the near-term need for mobile capacity. In addition to helping fill the demand for bandwidth, this spectrum in particular plays an important roll in 5G. As Michael Kratsios, Deputy U.S. Chief Technology Officer in the White House Office of Science and Technology Policy wrote, “America has consistently led the way in the deployment of next generation wireless networks, and it is more important than ever that we lead in 5G deployment.”<sup>5</sup>

There are significant consequences for 5G leadership—the capabilities of reliable ultra-low latency, high-bandwidth broadband and massive Internet of Things connectivity will provide a platform for a host of

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Inc., Request for Modified Coordination Procedures in Band Shared Between the Fixed Service and the Fixed Satellite Service, RM-11778, Order and Notice of Proposed Rulemaking, (Rel July 13, 2018).

<sup>3</sup> Caleb Henry, “C-Band Alliance doubles spectrum offer to 200 megahertz” *Space News* (Oct. 22, 2018), <https://spacenews.com/c-band-alliance-doubles-spectrum-offer-to-200-megahertz/>.

<sup>4</sup> See, e.g., Cisco Systems Inc., *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016-2021* (2017), <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visualnetworking-index-vni/mobile-white-paper-c11-520862.html>.

<sup>5</sup> Michael Kratsios, “America Will Win the Global Race to 5G,” *White House Office of Science and Technology Policy* (Oct. 25, 2018), <https://www.whitehouse.gov/articles/america-will-win-global-race-5g/>.

important innovations. As Deloitte characterized the situation, 5G presents countries with “the chance to lead for a decade.”<sup>6</sup> Other countries are keen to claim this opportunity and provide the connectivity platform that will stitch together such services as augmented reality, unmanned aerial vehicles, artificial intelligence, smart cities, etc. China, in particular, is eager to gain influence over the direction of the technology, as well as deploy it at tremendous scale.<sup>7</sup>

The FCC has taken a number of important steps to set the stage for 5G deployments, most notably the recent infrastructure orders and the high-band auctions scheduled for next month. There is considerable excitement around breakthrough innovation enabling use of millimeter-wave spectrum, and early tests are quite promising.<sup>8</sup> However, even further-than-expected propagation of millimeter wave spectrum still requires costly infrastructure deployment to reach wide coverage. Even if millimeter-wave technology can achieve thousands of feet of coverage, achieving wide coverage would be prohibitively expensive for some areas. Mid-band frequencies, such as 3.7 to 4.2 GHz, are in the spectrum sweet spot, offering significant coverage and real capacity compared to relatively limited low-band spectrum. Getting this spectrum cleared and repurposed for flexible mobile services as quickly as possible would be another important step in setting the stage for successful early 5G deployment in the United States.

## THE TRANSITION TIGHTROPE

The 3.7 to 4.2 GHz band includes fixed satellite services today, and it is important that the television distribution facilitated by the C-band not be interrupted. The fixed satellite services—distributing television across the nation—represent a far greater challenge to successfully transition than the relatively minimal point-to-point fixed services in the band. As is well documented in the record, significant economic value depends on reliable distribution of television programming over C-band spectrum. However, this service can be provided effectively with considerably less spectrum. By concentrating use to a smaller portion of spectrum and gradually connecting more headends to a fiber distribution system, or through other mechanisms, operators can reduce the spectrum needed for this service.

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<sup>6</sup> Dan Littmann, et al., “5G: The chance to lead for a decade,” *Deloitte* (2018), <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-5g-deployment-imperative.pdf>.

<sup>7</sup> Doug Brake, “Economic Competitiveness and National Security Dynamics in the Race for 5G between the United States and China” (August 2018). TPRC 46: The 46th Research Conference on Communication, Information and Internet Policy 2018, <https://ssrn.com/abstract=3142229> or <http://dx.doi.org/10.2139/ssrn.3142229>.

<sup>8</sup> Mike Thelander and Emil Olbrich, “5G: The Greatest Show on Earth! Vol 2: Catching the Wave,” *Signals Research Group*, (Oct. 2018), <http://signalsresearch.com/issue/5g-the-greatest-show-on-earth-2/>.

Co-frequency satellite and terrestrial operations would likely require prohibitively large geographic exclusion zones, but other tools would accommodate a transition of satellite services, freeing up spectrum for terrestrial use. Intel and Intelsat, in the companies' initial proposal, suggested satellite operators could: (1) "coordinate the relocation of certain customers on a geographic-area-by-geographic-area basis to a subset of frequencies"; (2) "relocate antennas outside the geographic area and make use of wired or wireless alternatives"; or (3) use "negotiated exclusion zones and/or shielding" to protect earth stations.<sup>9</sup> A wide variety of different possible mechanisms could be deployed to relieve FSS use of the band while protecting remaining incumbent services with no disruption to service. Each of these different options presents tradeoffs, with a different economic calculus depending on the specifics of any earth station operations.

The non-exclusive right all FSS licensees have to the full 500 megahertz raises some unique challenges, as the Commission acknowledges.<sup>10</sup> Perhaps this policy made sense decades ago when spectrum was relatively plentiful, but today the proliferation of spectrum-intensive uses necessitates a change in policy. In any event, holdout and other problems can be better addressed through direct negotiation on the secondary market compared to an auction.

## **BENEFITS OF A MARKET-BASED APPROACH**

A market-based approach empowers the relevant stakeholders with the flexibility to best balance the complex, competing interests in the band. As the Commission acknowledges, it lacks comprehensive information on existing earth station operations, with potentially thousands of earth stations still unregistered. Direct negotiation helps avoid the particular difficulties existing non-exclusive rights pose to auction design.

The consortium proposal would likely see spectrum repurposed much more quickly than any of the alternatives. A voluntary, market-based mechanism provides the incentive to expeditiously free up valuable 5G spectrum to those actors best positioned to gather accurate information on existing operations and most interested in protecting existing customers.

Some criticize the market-based proposal as not providing a source of money to the treasury. This concern is misplaced. Auctions should be relied on as an imperfect tool to discover the most socially beneficial use. Auctions identify the firms that are most confident they can derive more value from the spectrum than they bid. The fact that proceeds flow to the treasury is an added benefit (with some political significance), but it should not drive spectrum allocation.

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<sup>9</sup> Joint Comments of Intelsat License LLC and Intel Corporation at 16-17.

<sup>10</sup> NPRM at 59.

## CONCLUSION

Mobile operators would like to put this spectrum to use for 5G services that will advance U.S. innovation and productivity. Satellite operators are willing and able to give up some spectrum while also protecting existing services. Allowing such a significant repurposing of spectrum to take place through the secondary market would be a big step for the commission. ITIF is in agreement with Commissioner O’Rielly when he said, “It is rare that you can see the stars align to be able to execute such a large change in spectrum policy.”<sup>11</sup> Rather than micro-managing an auction, overseeing a long, drawn-out repacking, and likely hosting years of *ex parte* meetings, ITIF urges the Commission to simply “let it rip,” as White House economic advisor Larry Kudlow would say, and allow the parties to move forward with the market-based proposal.<sup>12</sup>

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<sup>11</sup> Statement of Commissioner Michael O’Rielly *available at* <https://docs.fcc.gov/public/attachments/FCC-18-91A3.pdf>.

<sup>12</sup> *See*, Marguerite Reardon, “Trump officials on 5G: Bring it on, private sector,” *C-Net* (Sept. 28, 2018), <https://www.cnet.com/news/white-house-hosts-5g-summit/>.