

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

In the Matter of	)	
	)	
Comment Sought on Competitive Bidding	)	AU Docket No. 20-34
Procedures and Certain Program	)	WC Docket No. 19-126
Requirements for the Rural Digital	)	WC Docket No. 10-90
Opportunity Fund Auction (Auction 904)	)	

**REPLY COMMENTS OF STARRY, INC.**

Starry, Inc.<sup>1</sup> submits these reply comments in response to the record and the Federal Communications Commission’s (FCC or Commission) *Public Notice* seeking comment on the auction procedures for the Rural Digital Opportunity Fund (RDOF).<sup>2</sup> All consumers need and deserve more efficient, reliable broadband networks that deliver faster services with lower latency, and the FCC’s RDOF auction is a prime opportunity to expand these offerings to urban and rural areas. To do so effectively, Starry believes the record supports minor policy changes to help ensure the RDOF expands future-proof, high-quality services across all corners of the United States. Specifically, Starry suggests that the Commission include the Lower 37 GHz Band (37-37.6 GHz) in the list of spectrum bands that can be used to meet RDOF obligations, and make clear that any fixed wireless provider using an existing technology and spectrum that can support gigabit service is able to bid in the gigabit tier, regardless of whether they currently offer gigabit service.

**I. THE FCC SHOULD EXPAND ITS PROPOSED SPECTRUM CHART TO RECOGNIZE ALL SPECTRUM FRONTIERS BANDS THAT CURRENTLY SUPPORT NEXT-GENERATION SERVICES**

Starry agrees that the FCC’s RDOF auction can meaningfully maximize the value of Universal Service dollars by deploying and expanding “future-proofed” networks and innovative

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<sup>1</sup> Starry, Inc., is a Boston- and New York-based technology company that utilizes millimeter waves to re-imagine last-mile broadband access as an alternative to fixed wireline broadband. Starry currently deploys its wideband hybrid fiber wireless technology in the Boston; Washington, DC; Los Angeles; New York City; and Denver areas, with plans to expand our presence to additional U.S. cities through 2020.

<sup>2</sup> Public Notice, *Comment Sought on Competitive Bidding Procedures and Certain Program Requirements for the Rural Digital Opportunity Fund Auction (Auction 904)*, AU Docket No. 20-34, WC Docket Nos. 19-126 & 10-90 (rel. Mar. 2, 2020) (*Public Notice*).

5G services.<sup>3</sup> To help advance this vision, the *Public Notice* offers providers a “non-exhaustive” appendix of specific spectrum bands that may be used to meet RDOF performance obligations, and seeks comment on the list.<sup>4</sup> Starry agrees with commenters who assert that the appendix should be expanded to account for upcoming spectrum auctions and to properly recognize that all Spectrum Frontiers bands currently support next-generation services, including the Lower 37 GHz Band.<sup>5</sup>

The Commission’s fast work to free-up mid- and high-band spectrum through recent auctions is laudable, and underscores that providers today increasingly rely on a variety of licensed and shared spectrum bands to connect consumers. As the Wireless Internet Service Providers Association (WISPA) explains, millimeter wave (mmW) frequencies allow for “fiber-like wireless capacity, enabling gigabit broadband internet with a fixed wireless infrastructure.”<sup>6</sup> And the FCC itself continues to recognize that mmW and mid-band spectrum are particularly “ideal” for 5G services requiring “low-latency, high-capacity operations,”<sup>7</sup> like those envisioned by the current proceeding.

The Commission’s proposed appendix should therefore reflect modern providers’ varied approaches to deployment and include a wider swath of spectrum, including licenses won in Auction 103 and the upcoming C-Band (3.7-4.2 GHz) auction,<sup>8</sup> as well as the Lower 37 GHz

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<sup>3</sup> *Id.* ¶ 1.

<sup>4</sup> *Id.* ¶¶ 40-42; Appendix B.

<sup>5</sup> *See, e.g.*, Comments of the Wireless Internet Service Providers Association, AU Docket No. 20-34 (filed Mar. 27, 2020) (WISPA Comments); Comments of US Telecom Association, AU Docket No. 20-34 (filed Mar. 27, 2020) (USTA Comments).

<sup>6</sup> WISPA Comments at 11 (*citing*, Maravedis, 5G Fixed Wireless Gigabit Service Today: Industry Overview (Nov. 2017) at 12, *available at* <https://go.siklu.com/hubfs/Content/White%20Papers/Maravedis%20Industry%20Overview:%205G%20Fixed%20Wireless%20Gigabit%20Services%20Today.pdf>).

<sup>7</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, GN Docket No. 14-177, WT Docket No. 10-112 ¶ 2 (rel. June 8, 2018); *Expanding Flexible Use of the 3.7-4.2 GHz Band*, Report and Order and Order of Proposed Modification, GN Docket No. 18-122 ¶ 2 (rel. Mar. 3, 2020).

<sup>8</sup> *See*, USTA Comments at 10-11.

Band.<sup>9</sup> The Lower 37 GHz Band, in particular, offers a low-barrier path to accessing shared mmW spectrum. While some fixed wireless operators have the financial means and business strategy oriented towards acquiring licenses, including mmW licenses, most do not. The Lower 37 GHz Band offers the best opportunity for all providers to access high-capacity licensed mmW spectrum that is highly capable of supporting gigabit services, as the Commission has recognized. This band was first established in the *First Spectrum Frontiers Report & Order*, when the Commission determined that it would be available on a licensed shared basis.<sup>10</sup> The Commission later issued a *Further Notice of Proposed Rulemaking* in 2018, seeking comment on a proposed licensing and sharing structure for the band.<sup>11</sup> The record in response to the *FNPRM* supports the Commission's proposal, and the Commission has indicated that it would take action to adopt final rules.<sup>12</sup>

Starry has long supported the Commission's efforts to make this low-barrier, high-capacity licensed band available for shared use,<sup>13</sup> and believes the Commission will adopt final rules for the band in the near term. To ensure that all useful and available spectrum bands are

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<sup>9</sup> See, WISPA Comments at 6-7.

<sup>10</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Report and Order, GN Docket No. 14-177, WT Docket No. 10-112 ¶¶ 111-118 (rel. July 14, 2016).

<sup>11</sup> *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Third Further Notice of Proposed Rulemaking, GN Docket No. 14-177, WT Docket No. 10-112 ¶¶ 62-69 (rel. June 8, 2018).

<sup>12</sup> See, e.g., Comments of AT&T, WT Docket No. 14-177 et al. (filed Sept. 10, 2018) (AT&T Comments); Comments of the Wireless Internet Service Provider Association, WT Docket No. 14-177 et al. (filed Sept. 10, 2018) (WISPA Comments); Comments of the Dynamic Spectrum Alliance, WT Docket No. 14-177 et al. (filed Sept. 10, 2018) (DSA Comments); Comments of Federated Wireless, Inc., WT Docket No. 14-177 et al. (filed Sept. 10, 2018) (Federated Comments); Comments of Competitive Carriers Association, WT Docket No. 14-177 et al. (filed Sept. 10, 2018) (CCA Comments); Comments of the Telecommunications Industry Association, WT Docket No. 14-177 et al. (filed Sept. 10, 2018) (TIA Comments); Comments of the Open Technology Initiative at New America, WT Docket No. 14-177 et al. (filed Sept. 10, 2018) (OTI Comments).

<sup>13</sup> See, e.g., Comments of Starry, Inc., GN Docket No. 14-177 (filed Sept. 10, 2018); Reply Comments of Starry, Inc., GN Docket No. 14-177 (filed Sept. 18, 2018).

available for RDOF participants, we urge the Commission to include the Lower 37 GHz Band on the list of eligible frequencies.

The RDOF auction represents a timely opportunity for providers to benefit from the Commission's proactive efforts to deploy spectrum for new 5G technologies. Including all mid-band and Upper Microwave Flexible Use service bands<sup>14</sup> in the list of eligible frequencies will promote auction participation and further consumers' robust access to higher-quality services.

## **II. THE COMMISSION SHOULD NOT PRESUMPTIVELY PREVENT FIXED WIRELESS OPERATORS FROM BIDDING IN THE GIGABIT TIER**

Existing fixed wireless technologies in licensed and unlicensed bands are capable of gigabit speeds today, especially when operating in wider bandwidths like those available in mmW spectrum. Starry supports those commenters that urge the Commission to reject its proposal to arbitrarily prohibit fixed wireless providers from bidding in the Gigabit service tier.<sup>15</sup> A provider's decision to offer a service tier, as shown on their Form 477 filing, is unrelated to whether or not the technology they use, or could use, is capable of supporting higher speeds; an operator's business decision on what products and services to offer is not indicative of its *ability* to offer that service, or whether it would offer that service to RDOF-eligible locations.

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<sup>14</sup> With respect to the Lower 37 GHz Band, the Commission has adopted rules that make the band available on a licensed, coordinated shared basis, and has made several commitments to finalize those rules in the near term. *See, Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, GN Docket No. 14-177, WT Docket No. 10-112 (rel. June 8, 2018); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, GN Docket No. 14-177, WT Docket No. 10-112 (rel. Nov. 22, 2017); *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services; Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, GN Docket No. 14-177, WT Docket No. 10-112 (rel. July 14, 2016).

<sup>15</sup> *See, e.g.,* WISPA Comments at 10, 11-12; Comments of Cambium Networks, AU Docket No. 20-34 at 1, 3- 4 (filed Mar. 27, 2020) (Cambium Comments); Comments of Siklu Communication Ltd., AU Docket No. 20-34 (filed Mar. 27, 2020) (Siklu Comments); Comments of WATCH Communications, AU Docket No. 20-34 (filed Mar. 27, 2020).

Providers use a variety of strategies in designing their product and service offerings, and tailor them to anticipate demand in a given area and their ability to win market share with new subscribers or increase revenue among existing internet subscribers. Gigabit services are generally priced at the most expensive tier of consumer internet services, and most consumers do not require that amount of capacity.

Modern fixed wireless technologies operating across a wide variety of spectrum bands are capable of providing gigabit services. For example, Starry’s technology is based on the 802.11 standard, which we upconvert to operate in wide channels in licensed mmW spectrum. Using a full 160-megahertz channel, we are able to reach a PHY capacity of 6.9 gigabits-per-second, per sector.<sup>16</sup> As such, our network is designed to provide over a gigabit of capacity to each user, but we do not currently market it as a service. This is in part because we believe consumers value a simple, quality product at a competitive price – it is not because we lack the capacity. The same is true for countless fixed wireless operators using a variety of other technologies and spectrum bands, including those operating in licensed flexible use mmW bands, unlicensed mmW bands including the 57-71 GHz band, and licensed point-to-point bands including 70/80/90 GHz bands.

As WISPA further explains, “in any given market, broadband consumers may not subscribe to Gigabit service even where it is available or is capable of being delivered to consumers [...] but their needs may change over the 10-year support term.”<sup>17</sup> Market demand can and does change over time, and RDOF is appropriately focused on near and longer-term future market needs. A provider should not be handicapped in the upcoming auction because they provide a service at a speed that is responsive to market demands today.

We agree that the FCC should evaluate “on a case-by-case basis” whether providers can reasonably meet the specific requirements of the program, and that this is the point at which the Commission should make a determination about whether a provider is capable, using the specified technology and spectrum, to meet the tier requirements for which they apply.<sup>18</sup> It is

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<sup>16</sup> See, e.g., Cisco, “802.11ac: The Fifth Generation of WiFi – Technical White Paper” (2018), available at <https://www.cisco.com/c/dam/en/us/products/collateral/wireless/aironet-3600-series/white-paper-c11-713103.pdf>.

<sup>17</sup> WISPA Comments at 11.

<sup>18</sup> See, *id.* at 11-12; Siklu Comments at 2; Viasat Comments at 6.

noteworthy that an RDOF applicant must submit detailed financial and technical information to demonstrate its ability to meet performance and buildout obligations.<sup>19</sup> Indeed, this thorough process will ensure that the FCC has sufficient information at the short-form application stage – well before the start of the auction – to determine whether a providers’ technology is capable of delivering upon its proposed performance. The FCC should refrain from presuming limitations about the capabilities of fixed wireless service at the outset of this proceeding,<sup>20</sup> and instead promote auction participation and the ultimate expansion of competitive broadband services to consumers in eligible areas.

### III. CONCLUSION

Starry supports the Commission’s efforts to further ubiquitous access to next-generation internet access services in all corners of the United States. A digital divide persists in rural and urban areas alike, and tailored modifications to the FCC’s RDOF auction procedures will ensure that more consumers are connected through the expansion of efficient, reliable, and competitive broadband technologies.

Respectfully submitted,  
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<sup>19</sup> *Public Notice* ¶¶ 56-63.

<sup>20</sup> *See*, WISPA Comments at 35; Cambium Comments at 3; Comments of Space Exploration Technologies Corp., AU Docket No. 20-34 at 16 (filed Mar. 27, 2020).