

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

In the Matter of	)	
	)	
Public Notice Seeking Comment on	)	GN Docket No. 19-128
Bidirectional Sharing Pursuant to	)	
RAY BAUM’S Act of 2018	)	

**REPLY COMMENTS OF IRIDIUM COMMUNICATIONS**  
**INC.**

**I. INTRODUCTION**

Iridium Communications Inc. (“Iridium”) hereby responds to the Public Notice released by the Federal Communications Commission’s (“Commission”) Office of Engineering and Technology (“OET”) and Wireless Telecommunications Bureau (“WTB”), and together (“Bureaus”) on bidirectional sharing as directed by Congress in the RAY BAUM’S Act of 2018 and to the comments filed in response to the Public Notice.<sup>1</sup> The Act requires the Commission, in collaboration with the National Telecommunications and Information Administration (“NTIA”, and together “Agencies”), to submit a report that examines providing Federal entities with access to non-Federal spectrum on a shared basis and to also provide the public with the opportunity to comment. In generating this report, the Agencies are required to consider the regulatory certainty that commercial spectrum users and Federal entities need for longer-term investment decisions and for shared access to be viable, and evaluate barriers to voluntary commercial arrangements in such shared spectrum.

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<sup>1</sup> *Office of Engineering and Technology and Wireless Telecommunications Bureau Seek Comment on Bidirectional Sharing Pursuant to RAY BAUM’S Act of 2018*, Public Notice, DA 19-371 (rel. May 1, 2019).

The Bureaus must consider the impact that sharing of non-Federal spectrum with Federal users will have on incumbent commercial satellite operators. As an industry leader in the satellite sector and the only provider of communications services in the world that offers truly global coverage, Iridium has long championed increased operational certainty for incumbent operators of commercial satellite spectrum who inherently require long planning cycles. Satellite systems are designed with particular sharing environments in mind and the possibility of unknown new Federal operations coming into non-Federal satellite spectrum at some future date will create major uncertainty for satellite companies, chilling investment and undercutting America's global space leadership.

Commercial licensees are generally strongly incentivized to utilize allocated spectrum efficiently while operators on the Federal side lack comparable incentives. Policymakers should look first to voluntary agreements between commercial licensees and federal operators seeking to operate in non-federal bands. In the satellite context, satellite-capacity leases could chart a constructive path to enhanced Federal access to non-Federal bands allocated for satellite operations.<sup>2</sup>

Any bidirectional examination should include consideration of opening Federal spectrum to expanded non-Federal use and exploring shared access in newly-opened commercial bands. Allowing bidirectional sharing to occur in Federal spectrum allocations means that new commercial entrants will be well aware of the interference environment when they create their business plans. This approach will simultaneously satisfy Congress's mandate to study shared

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<sup>2</sup> Satellite operators utilize satellite-capacity transponder leases and not spectrum leases. The Commission has long recognized that satellite-capacity transponder leases differ from spectrum leasing arrangements and that "[a]mong other things, satellite-capacity transponder leasing does not involve the leasing of spectrum." *Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz*, Report and Order, 26 FCC Rcd 5710, 5713 n.15 (2011).

access of spectrum between Federal and non-Federal users.

## **II. L-BAND SATELLITE COMPANIES PROVIDE CRITICAL COMMUNICATIONS SERVICES BUILT ON DECADES OF REGULATORY CERTAINTY**

Over the course of many decades, the U.S. Government has built the foundation for the success of the L-Band by providing stable spectrum allocations, protecting allocated spectrum from harmful interference, and defending L-band interests around the globe.<sup>3</sup> The L-Band has evolved over the years to include three key services: Global Positioning System (“GPS”), the NOAA Geostationary Operational Environmental Satellites (“GOES”), which provide positional, timing, and weather data directly to users all across the U.S., and satellite communications (“SATCOM”) services provided by companies like Iridium.<sup>4</sup> These services have operated in their current spectrum bands for decades with considerable amounts of capital being invested into the satellite systems in reliance on a foundation of continued protection from harmful interference and any dramatic change in sharing environment – and the corresponding benefits to consumers and the country have flowed from these careful decisions.

The FCC first designated the MSS operations in the Big LEO band plan in 1994.<sup>5</sup> At the time, the Commission established two sub-bands: a CDMA sub-band that could be shared by multiple systems and a TDMA sub-band that would be limited to a single system. Ultimately only one operator, Globalstar, launched a CDMA system, and Iridium launched the sole TDMA

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<sup>3</sup> See generally, Lon C. Levin & Dennis C. Nash, American Mobile Satellite Corp., *U.S. Domestic and International Regulatory Issues* (Jan. 1, 1993), <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/-19940018275.pdf>.

<sup>4</sup> Other SATCOM providers are also present in the band.

<sup>5</sup> The Big LEO band consists of portions of spectrum in the L-band (1610-1626.5 MHz) and the S-band (2483.5-2500 MHz).

system. Iridium's success as a U.S. company has depended on the stability of its spectrum allocation and support from federal government partners.

Iridium was originally provided with an exclusive spectrum allocation of 1621.35-1626.5 MHz to leave room for what had been expected to be multiple operators in the CDMA portion of the band. In 2007, the Commission revised the Big LEO band plan to allocate the 1618.725-1626.5 MHz band to Iridium on an exclusive basis, the 1617.775-1618.725 MHz band on a shared basis with Globalstar, and the 1610-1617.775 MHz and 2483.5-2495 MHz bands to Globalstar on an exclusive basis.<sup>6</sup>

Iridium is engaged primarily in providing mobile voice and data communications services to businesses, the U.S. and foreign governments, non-governmental organizations, and consumers via its satellite network.<sup>7</sup> Iridium's unique L-band satellite network provides reliable communications services to regions of the world where terrestrial wireless or wireline networks do not exist or are limited, including remote land areas, open ocean, airways, the polar regions and regions where the telecommunications infrastructure has been affected by political conflicts or natural disasters. In February 2019, Iridium completed the upgrade of its satellite constellation with Iridium® NEXT satellites, which support higher data speeds for new products, including the recently introduced Iridium Certus<sup>SM</sup> broadband service.<sup>8</sup> As of March 31, 2019, Iridium had approximately 1,151,000 billable subscribers worldwide, representing an increase of

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<sup>6</sup> Spectrum and Service Rules for Ancillary Terrestrial Components in the 1.6/2.4 GHz Big LEO Bands, *Second Order on Reconsideration, Second Report and Order, and Notice of Proposed Rulemaking*, 22 FCC Rcd 19733, 19737 ¶ 8 (2007) (adopting the L-band plan to provide Iridium with additional exclusive spectrum and to create stability in the MSS market).

<sup>7</sup> Iridium, Quarterly Report (Form 10-Q) at 19 (Apr. 23, 2019), <https://www.sec.gov/ix?doc=/Archives/edgar/data/1418819/000141881919000010/irdm10-q033119.htm>.

<sup>8</sup> Iridium Communications Inc., Annual Report (Form 10-K), at 2 (Feb. 28, 2019), [https://www.sec.gov/Archives/edgar/data/1418819/000141881919000005/irdm\\_1231-2018x10k.htm](https://www.sec.gov/Archives/edgar/data/1418819/000141881919000005/irdm_1231-2018x10k.htm).

16% since March 31, 2018.

### **III. SATELLITE OPERATORS REQUIRE CERTAINTY WITH REGARD TO SPECTRUM ALLOCATIONS**

Space policy success is centered on a stable spectrum environment and adequate interference protection given that satellite networks take years and significant sums of money to develop and launch. Satellite operators need to be certain that once satellites are operational the rules of the road will not materially change. However, the introduction of new significantly different services into existing bands would greatly increase the possibility of harmful interference with incumbent users and with adjacent band operations. Iridium and other satellite operators in the L-Band<sup>9</sup> depend on the knowledge that their neighbors would operate satellite systems at permitted power levels and with operational characteristics that will ensure their coexistence. Introducing new Federal operations to heavily utilized non-Federal spectrum like the L-band would upend decades of a predictable spectrum environment. The nature of satellite services requires robust protection from harmful interference to thrive. This must be true at the inception of the business – or else new satellite concepts will never come to fruition – and throughout the satellite’s useful life or the investment, customers and spectrum resources will be stranded.

To the extent policymakers want to re-examine existing bands, they should instead target underutilized spectrum first in adding Federal operations to non-Federal bands. The federal operations that are permitted in any underutilized spectrum should be grouped with similar, compatible services, *e.g.* permitting terrestrial services to operate in the same and adjacent bands

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<sup>9</sup> L-band operators include GPS, NOAA satellite services and other satellite communications operations.

as terrestrial. Any post-licensing sharing must carefully balance the need for new spectrum resources with the investment-backed expectations of incumbent operators.

The best sharing regimes are established at the initial commercial licensing phase where expectations can be properly aligned, and investments can be measured accordingly. The reliance interests are far too great for a satellite network to be launched only for its operations to be compromised by subsequent government policies that require post-hoc sharing arrangements. T-Mobile stresses the importance of retaining the rules for commercial spectrum once allocations are established.<sup>10</sup> CTIA emphasizes that “sharing frameworks must provide regulatory certainty and interference protection,” and that “support commercial investment decisions and provide spectrum licensees with sufficient rights to warrant the investment necessary to deploy robust, next-generation networks.”<sup>11</sup> Verizon encourages “[a] market-based approach to bidirectional sharing”<sup>12</sup> and allowing “both sides voluntarily to negotiate to meet their respective needs and to appropriately internalize associated costs.”<sup>13</sup> Opening non-Federal spectrum to Federal entities on a non-volunteer basis would frustrate investment-backed expectations and generate business uncertainty, leading to reduced incentives for investment and innovation.

#### **IV. SHARING REGIMES MUST PROVIDE THE RIGHT INCENTIVES FOR SPECTRUM TO BE EFFICIENTLY UTILIZED**

The Bureaus must recognize that, in general, commercial licensees are strongly incentivized to utilize allocated spectrum efficiently while such incentives are completely absent on the Federal side. Commercial licensees, especially satellite operators, must invest considerable amount of capital to build and maintain a communications system. As noted above,

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<sup>10</sup> Comments of T-Mobile USA, Inc. at 3 (filed May 31, 2019).

<sup>11</sup> Comments of CTIA at 6, 7 (filed May 31, 2019).

<sup>12</sup> Comments of Verizon at 3 (filed May 31, 2019).

<sup>13</sup> *Id.* at 4.

Iridium has utilized its small amount of allocated spectrum, 8.725 MHz, efficiently and has built a highly successful business that is the result of billions of dollars in investment.

Incentives to use spectrum more efficiently, however, are limited on the Federal side. As the U.S. General Accounting Office reported back in 2004, “there are few ... incentives for [Federal] agencies to use spectrum more efficiently” and that “[a]gencies’ guidance and policies ... do not require systematic consideration of spectrum efficiency in their acquisitions.”<sup>14</sup> The GAO further found that “[t]he lack of economic consequence ... has also provided little incentive to agencies to pursue opportunities proactively to develop and use technologies that would improve spectrum efficiency governmentwide.”<sup>15</sup>

Absent these incentives, policymakers should be cautious in mandating expansion of Federal services. The Commerce Spectrum Management Advisory Committee (“CSMAC”) recently reported that “Federal agencies currently lack the type of ‘property rights’ that would incentivize market behaviors as well as other administrative incentives to conduct secondary spectrum trades.”<sup>16</sup> The report found that “[i]ncentives for more efficient and effective federal use generally need to overcome often high transaction costs” and the reality that agencies “must work with an embedded base of legacy systems that continue to work and meet mission requirements as part of a long expected life-cycle .... [and therefore] any new spectrum-dependent systems also must be designed to be integrated with a baseline of existing systems.”<sup>17</sup>

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<sup>14</sup> U.S. General Accounting Office, *Spectrum Management: Better Knowledge Needed to Take Advantage of Technologies That May Improve Spectrum Efficiency*, Report to Congressional Requesters, at 3 (May 2004), <https://www.gao.gov/new.items/d04666.pdf>.

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

<sup>16</sup> CSMAC Spectrum Efficiency Subcommittee Report, at 2 (July 2018), [https://www.ntia.doc.gov/files/ntia/publications/csmac\\_spectrum\\_efficiency\\_subcommittee\\_report.pdf](https://www.ntia.doc.gov/files/ntia/publications/csmac_spectrum_efficiency_subcommittee_report.pdf).

<sup>17</sup> *Id.* at 5.

These structural barriers to incentivizing better use of Federal spectrum have at times led to inefficient utilization of the Federal spectrum. Allowing Federal entities to access non-Federal spectrum could exacerbate this calculus. The Commission should consider CSMAC's findings here and, in general, include CSMAC's body of research on bidirectional sharing in its considerations for any future actions.<sup>18</sup>

## **V. BIDIRECTIONAL SHARING SHOULD BE INTERPRETED TO ALLOW NON-FEDERAL OPERATORS ACCESS TO FEDERAL SPECTRUM**

The Bureaus should interpret bidirectional sharing to also refer to providing access to spectrum, currently tied to Federal use, to non-Federal users and explore arrangements to allow non-Federal entities to utilize this formerly Federal spectrum for intermittent purposes such as emergency use.<sup>19</sup> With respect to satellite spectrum, allowing commercial satellite operators to access spectrum allocated for Federal satellite operations may provide commercial satellite operators with needed additional spectrum. This interpretation of bidirectional sharing and shared access would be entirely consistent with recent actions by the Commission in the Citizens

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<sup>18</sup> Other commenters in this docket have also urged the Commission to consider CSMAC's body of research on bidirectional sharing. *See* Comments of T-Mobile USA, Inc. at 7 n.19 ("The Commission's actions in response to RAY BAUM's Act should be informed by both the record in this proceeding and the work that CSMAC has already performed."), Comments of CTIA at 10 ("WTB and OET should study CSMAC's proposals and recommendations on facilitating bidirectional sharing through [Memorandums of Understanding]"), Comments of the Telecommunications Industry Association at 4 (filed May 31, 2019) ("Some of these issues were specifically explored by [CSMAC], and some of those recommendations could provide a path forward as the Commission studies the [bidirectional sharing] and provides recommendations to Congress."), and Comments of Verizon at 2-3 ("As [CSMAC] recognized in a report on bidirectional sharing, '[s]haring arrangements should be constructed in a way that meets the needs of both the incumbent and the new entrant.'").

<sup>19</sup> Verizon also notes that "[a] market-based approach to bi-directional sharing could provide federal agencies with negotiated access to spectrum when or where they need it – and an incentive for them to free up federal spectrum ... for commercial use." Comments of Verizon at 3.



Broadband Radio Service band,<sup>20</sup> the 37 GHz band,<sup>21</sup> and other bands where the FCC and NTIA are currently working to promote sharing arrangements between Federal entities and non-Federal users. Expanding bidirectional proposals to Federal spectrum also advances Congress's mandate to study shared access of spectrum between Federal and non-Federal entities.

## VI. CONCLUSION

As the Commission prepares its report to Congress on bidirectional sharing and examines aspects of providing Federal entities access to non-Federal spectrum, Iridium urges the Bureaus to consider how post-hoc sharing of non-Federal spectrum with Federal users will create uncertainty for incumbent operators, and especially satellite companies.

Respectfully submitted,

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June 17, 2019

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<sup>20</sup> See *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015).

<sup>21</sup> See *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014 (2016).