

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Inquiry Concerning Deployment of Advanced)	GN Docket No. 18-238
Telecommunications Capability to All Americans in)	
a Reasonable and Timely Fashion)	

REPLY COMMENTS OF HUGHES NETWORK SYSTEMS, LLC

Hughes Network Systems, LLC (“Hughes”) submits these reply comments in response to the Commission’s inquiry into whether deployment of advanced telecommunications capability is reasonable and timely.¹ As discussed in more detail below, the Commission’s broadband deployment analysis should recognize the importance of satellite broadband in the deployment of advanced telecommunications capability, including to rural, remote, and other underserved, hard-to-reach areas of the country. Accordingly, the Commission should reject calls to exclude satellite broadband from its analysis, and should meaningfully evaluate the latest available satellite broadband deployment data. Moreover, to spur broadband deployment, the Commission should remove regulatory barriers to investment and ensure long-term protected access to sufficient spectrum access to support satellite broadband services.

¹ See *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Fourteenth Broadband Deployment Report Notice of Inquiry, FCC 18-119 (rel. Aug. 9, 2018) (“*NOI*”).

I. SATELLITE BROADBAND IS INTEGRAL TO DEPLOYMENT OF ADVANCED TELECOMMUNICATIONS CAPABILITIES TO UNDERSERVED AREAS AND DURING EMERGENCIES TO SUPPORT DISASTER RELIEF EFFORTS

Hughes is the largest provider of commercial satellite broadband services in the United States and globally, with approximately 1.3 million subscribers in the Americas.² Hughes provides its broadband service through the use of a three-satellite, Ka-band geostationary satellite orbit (“GSO”) fixed satellite service (“FSS”) constellation, which includes coverage of the continental United States, southeastern Alaska, Puerto Rico and the U.S. Virgin Islands.

Satellite broadband providers such as Hughes have been instrumental in expanding the availability of advanced telecommunications capability to underserved areas of the country, including rural, remote, and tribal communities where terrestrial infrastructure can be prohibitively expensive to deploy. With the March 2017 launch of HughesNet Gen5, a fifth-generation high-speed satellite Internet service using capacity on the EchoStar XIX satellite, Hughes is now a fixed broadband option for consumers across the continental United States, southeastern Alaska, Puerto Rico, and the U.S. Virgin Islands, providing service meeting the Commission’s 25/3 Mbps broadband speed threshold ubiquitously.³ Hughes also is in the process of constructing EchoStar XXIV, a next-generation, Commission-licensed, ultra-high density satellite expected to launch in 2021 to provide expanded services to consumers throughout the United States and the Americas at speeds of 100 Mbps or more.⁴

² See Press Release, Hughes, *Bank BRI Selects Hughes to Power Next Generation Satellite Network* (July 17, 2018), <https://www.hughes.com/who-we-are/resources/press-releases/bank-bri-selects-hughes-power-next-generation-satellite-network>.

³ Press Release, Hughes, *Hughes Announces HughesNet Gen5 High-Speed Satellite Internet Service*, (Mar. 7, 2017), <https://www.hughes.com/who-we-are/resources/press-releases/hughes-announces-hughesnet-gen5-high-speed-satellite-internet>.

⁴ See Press Release, Hughes, *Hughes Selects Space Systems Loral to Build Next-Generation Ultra High Density Satellite* (Aug. 9, 2017), <https://www.echostar.com/en/Press/Newsandmedia/Hughes%20Selects%20Space%20Systems%20Loral%20To%20Build%20Next-Generation%20Ultra%20High%20Density%20Satellite.aspx>.

Additionally, as a result of Hughes' global leadership in the development and provision of satellite solutions, Hughes has been selected by WorldVu Satellites Limited d/b/a OneWeb to develop the ground system, including gateways and user terminals, for its global low earth orbit ("LEO") satellite constellation. OneWeb's mission is to enable affordable Internet access to everyone, even in the most remote regions of the globe. The joint development of the ground network, currently valued at over USD \$300 million, began in 2015, and shipments are expected to begin in mid-2018.⁵ By partnering with OneWeb, Hughes is facilitating high-speed, low-latency broadband connectivity to regions of the United States where it is often economically or physically infeasible for terrestrial networks to build out.

The role of satellite broadband, and HughesNet Gen5 in particular, has been diverse and expansive with respect to U.S. disaster relief efforts. Indeed, satellite broadband has proven to be "the only reliable communications system in the aftermath of the hurricanes."⁶ Notably, during and in the aftermath of the 2017 hurricane season, Hughes used and continues to use its available infrastructure and capacity to support relief efforts in affected U.S. regions, namely in Texas, Puerto Rico, and the U.S. Virgin Islands. In Texas, Hughes worked with ResponseForce1 in supporting Federal Emergency Management Agency ("FEMA") shelters with satellite broadband for public/community use to check in with family and friends via VoIP and internet.⁷ In Puerto Rico, Hughes and ResponseForce1 supported the San Cristobal Hospital in Ponce and deployed VSATs and solar generators to get the hospital back up and operational with the ability

⁵ See Press Release, Hughes, *Hughes Announces Partnership in OneWeb's Innovative Global Satellite Broadband Initiative to Close the Digital Divide* (June 25, 2015); see also Press Release, Hughes, *Hughes Signs \$190M Contract with OneWeb for Production of Ground Network System for Global Internet Services*, PR Newswire (Nov. 7, 2017).

⁶ Comments of Liga de Cooperativas de Puerto Rico, WC Dkt. No. 18-143 *et al.* at 1 (Jul. 2, 2018); see also Comments of Casa Pueblo, WC Dkt. No. 18-143 *et al.* at 1 (Jul. 5, 2018).

⁷ See *Response Force 1*, Hughes Blog ("ResponseForce 1"), <https://www.hughes.com/disaster-relief-support/response-force-1> (last visited Sept. 30, 2018).

to communicate. This enabled the hospital leadership teams to order additional supplies and medications as well as evacuate critical patients.⁸

Hughes also supported key government agencies in Puerto Rico and the U.S. Virgin Islands, such as FEMA, the National Weather Service, Department of Defense, and Customs and Border Patrol. Using the Hughes VSAT network, ResponseForce 1 worked with FEMA to get the St. Croix, St. Thomas and the San Juan Airports all back online to schedule the initial first responder flight cycles to the islands.⁹ In fact, FEMA used Hughes services extensively during the response effort, and is expected to continue to do so for the foreseeable future. In November 2017 alone, FEMA relied on Hughes satellite-based services to place over 30,000 calls.¹⁰

Since the 2017 hurricanes struck Puerto Rico and the U.S. Virgin Islands, there have been over 1,200 HughesNet new activations by both government and private sector users on the islands. Throughout the ongoing hurricane recovery process, Hughes continues to provide satellite broadband services to residential and enterprise customers at Commission-defined broadband speeds, ensuring that families stay connected and businesses remain operational.¹¹ Through the continuing broadband connectivity provided by Hughes in these disaster-stricken regions, retail customers, including wholesalers, drug stores, and other vendors, are able to carry on business as usual, allowing residents to have their insurance claims processed, make credit card transactions, and purchase groceries using government-issued food stamp debit cards.¹²

⁸ *See id.*

⁹ *See id.*

¹⁰ *See* Jack Corrigan, *How Puerto Rico is Rebuilding Its Network Three Months After Maria*, Nextgov (Dec. 19, 2017), <http://www.nextgov.com/emergingtech/2017/12/how-puerto-rico-rebuilding-its-network-three-months-after-maria/144686/>.

¹¹ *See* Comments of Hughes, PS Dkt. No. 17-344 *et al.* (Jan. 22, 2018).

¹² *See Coamo Finds Connection in Isolation*, Hughes Blog, <https://www.hughes.com/disaster-relief-support/coamo-finds-connection-isolation> (last visited Sept. 30, 2018).

Given its role in providing broadband speeds of 25/3 Mbps and over to a significant number of U.S. consumers and during emergencies to support disaster relief efforts, satellite broadband has served, and continues to serve, a vital role in extending advanced telecommunications capabilities to underserved areas of the country.

II. THE COMMISSION SHOULD CONTINUE TO INCLUDE SATELLITE BROADBAND IN ITS BROADBAND DEPLOYMENT ANALYSIS

In view of the importance of satellite broadband to millions of consumers and others across the country as discussed above, the Commission should reject Common Cause's and NTCA's proposals to exclude, or incorporate additional benchmarks (*e.g.*, latency and data/usage caps) that would effectively exclude, satellite broadband from the Commission's Section 706 broadband deployment analysis.¹³ The Commission already considered and rejected these same proposals earlier this year when it issued the *2018 Broadband Deployment Report*,¹⁴ and Common Cause and NTCA offer nothing new to warrant a change in the Commission's approach. Despite the Commission's *2018 Broadband Deployment Report* findings as to the "lack of reliable and sufficient data" to support adoption of performance benchmarks such as latency and non-performance benchmarks such as data/usage allowances,¹⁵ Common Cause and NTCA are unable to identify any data sources or methodologies that would allow the Commission to adopt such benchmarks for its Section 706 analysis.

Common Cause and NTCA further fail to refute the Commission's finding that "many consumers choose relatively higher latency fixed satellite broadband services that meet the 25

¹³ See Comments of Common Cause and Public Knowledge (collectively, "Common Cause"), GN Dkt. No. 18-238, at 10 (Sept. 17, 2018); Comments of NTCA—The Rural Broadband Association ("NTCA"), GN Dkt. No. 18-238, at 6-7 (Sept. 14, 2018).

¹⁴ See *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 2018 Broadband Deployment Report, 33 FCC Rcd 1660, ¶¶ 36-39 (2018) ("*2018 Broadband Deployment Report*").

¹⁵ See *id.*

Mbps/3 Mbps speed benchmark and consume services such as Skype, Netflix, and YouTube that fall within the statutory definition of ‘advanced telecommunications capability.’”¹⁶ Indeed, broadband applications such as video streaming, web browsing, and accessing email and social media can be delivered with equal consumer satisfaction by high-throughput satellite services.¹⁷ Moreover, under International Telecommunication Union (“ITU”) recommendations, latency levels of up to 400 milliseconds (from mouth to ear) for satellite communications are acceptable for most applications, including voice service; windowing, proxies, and other schemes for video streaming performance; and caching, compression, and other mechanisms for accelerating browsing.¹⁸ In fact, since the launch of the HughesNet Gen5 service, Hughes has experienced four consecutive quarters of decreased retail consumer churn, thus demonstrating that customers are opting to keep their satellite broadband service even when presented with alternative technology options.¹⁹

Furthermore, Common Cause’s argument that satellite broadband is subject to weather disruptions and unspecified performance issues, thus rendering it inadequate compared to other fixed broadband options, fails to account for the significant advantages that satellite broadband offers over other fixed broadband options. For example, with no last-mile build out requirements, satellite broadband is often the quickest and simplest network technology to deploy, particularly with respect to restoring and expanding advanced telecommunications capabilities to underserved and disaster-stricken areas. Moreover, satellite broadband offers additional access to broadband networks and the overall communications infrastructure, thus ensuring that broadband services are resilient. Additionally, terrestrial fixed broadband networks are even more susceptible to weather disruptions in that they are

¹⁶ *Id.* ¶ 37.

¹⁷ See Comments of SES Americom, Inc. and O3b Limited (collectively, “SES”), WC Dkt. No. 18-143 *et al.*, at 3 (Jul. 26, 2018).

¹⁸ See ITU-T Recommendation G.114, *One-way transmission time* at 1-2 (May 2003).

¹⁹ See EchoStar First Quarter 2018 Investor Call (May 10, 2018).

more likely to be damaged or destroyed by severe weather conditions and also are more challenging to repair or replace. Satellite broadband networks, on the other hand, are less susceptible to severe weather damage and destruction, and thus service may be more quickly restored or extended to areas affected by severe weather. In fact, in certain areas such as Puerto Rico, satellite broadband has proven to be the only reliable communications system following destructive hurricane forces, as discussed in Section I above.

III. THE COMMISSION SHOULD PRESENT AND EVALUATE SATELLITE BROADBAND DEPLOYMENT DATA MEANINGFULLY AND INCLUDE THE LATEST AVAILABLE BROADBAND DEPLOYMENT DATA

Hughes supports the Commission's efforts to present and evaluate reliable, comprehensive data to assess deployment of broadband services to Americans. To accomplish this objective, the Commission should provide broadband deployment estimates based upon the latest available Form 477 data, rather than older Form 477 data reflecting less recent broadband deployment. Although issued in February 2018, the Commission's *2018 Broadband Deployment Report* provides fixed broadband deployment estimates reflecting older Form 477 data and appearing to be misleading or incomplete in that such estimates fail to account for more recent deployment during the year preceding the date of the report.²⁰ Thus, a consumer or decision-maker relying on the report to make an informed decision would not be alerted to the March 2017 launch of the HughesNet Gen5 service, providing ubiquitous Commission-defined broadband speeds across the United States.²¹

²⁰ See *2018 Broadband Deployment Report* ¶ 51 n.148.

²¹ Although the *2018 Broadband Deployment Report* notes that Hughes's and Viasat's satellite launches in 2017 could further increase their respective broadband offerings in the future, it does not provide broadband deployment estimates that account for the new satellite broadband offerings in 2017 and that would assist consumers and decision-makers in determining whether satellite broadband service is currently available in their community. See *id.* ¶ 51.

Additionally, Hughes agrees with Viasat that the Commission should not adopt the *NOI* proposal to continue the *2018 Broadband Deployment Report*'s approach in discussing fixed satellite broadband deployment estimates separately from, and in the paragraph immediately following, the presentation of a table containing only fixed terrestrial broadband deployment estimates.²² Rather than presenting satellite and terrestrial broadband deployment estimates in separate tables or otherwise separately, the Commission should provide a single table to present unified fixed broadband (including both satellite and terrestrial) deployment estimates. Such an approach is more consistent with technology-neutral regulation and better reflects the Commission's decision to include satellite services meeting Commission-defined broadband speeds as broadband offerings.

Hughes further agrees with Viasat and SES that the Commission should not consider possible limitations such as satellite capacity in assessing the geographic scope of reported satellite coverage.²³ As Viasat and SES note, all networks, regardless of technology, are subject to capacity and other limitations to some extent, thus impacting their ability to serve all potential users simultaneously within their network coverage area.²⁴ Any assessment of broadband deployment that accounts for possible limitations on only satellite networks would unfairly single out satellite networks for special treatment, and thus should be rejected.

IV. THE COMMISSION SHOULD SPUR BROADBAND DEPLOYMENT BY REDUCING BARRIERS TO INVESTMENT AND ENSURING SUFFICIENT SPECTRUM ACCESS FOR SATELLITE BROADBAND

Hughes supports the Commission's efforts to spur broadband deployment by removing regulatory barriers to investment and ensuring sufficient spectrum access for satellite broadband.

²² See Viasat Comments, GN Dkt. No. 18-238, at 4-5 (Sept. 10, 2018).

²³ See Viasat Comments at 6; Comments of SES Americom and O3B Limited (collectively, "SES"), GN Dkt. No. 18-238, at 4 (Sept. 17, 2018) ("SES Comments").

²⁴ See *id.*

A key barrier to satellite broadband investment is the lack of technology-neutral regulations, particularly with respect to access to scarce spectrum. Hughes agrees with Viasat that “expanding such access [to spectrum for broadband services] should be a priority for the Commission.”²⁵ As SES notes, “the satellite industry will be limited in its ability to close the digital divide [without] access to sufficient spectrum to deliver broadband connectivity.”²⁶ By adopting technology-neutral regulations, the Commission will ensure that satellite and terrestrial platforms can compete to meet the full range of consumer broadband demands. Failure to enable such competition could result in certain segments of the U.S. population being denied affordable broadband access.

With regard to access to spectrum resources, it is critical that the Commission adopt a technology-neutral approach to ensure that competitive broadband providers have access to the spectrum they need to support current and future customers. Over the previous decade or so, spectrum was still largely allocated to different uses on an exclusive or dedicated basis.²⁷ While the Commission required spectrum sharing in certain bands, this was accomplished primarily

²⁵ See ViaSat Comments at 3.

²⁶ See SES Comments at 5.

²⁷ See, e.g., *Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, Second Report and Order, 17 FCC Rcd 23193 (2002) (allocating spectrum, which previously was used for fixed microwave, multipoint distribution service, and federal government operations, to support deployment of new advanced wireless services, or “AWS”); *Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order, 18 FCC Rcd 2223 (2003) (reallocating spectrum previously used for mobile satellite services to provide additional spectrum for new fixed and mobile services, including AWS).

through coordination in limited geographic areas, whereby these services had technical characteristics that enabled sharing to occur within limited operational constraints.²⁸

However, demand for greater speeds and increasingly more spectrum required Congress and the Commission to adopt new methods of increasing spectrum efficiency, including expanding spectrum sharing and clearing for new uses. For example, Congress authorized the use of incentive auctions to clear some of the 600 MHz band previously allocated to television for new uses.²⁹ This auction was very successful at providing access to new spectrum for mobile wireless services. In addition, Congress has successfully required some government operations to be relocated to other frequency bands to make spectrum available for new commercial services, a subject also of the Mobile NOW Act.³⁰ The Commission also has enabled greater sharing of spectrum through innovative new approaches, as evidenced by the 3.5 GHz band rulemaking.³¹

With the upcoming development of, and anticipated consumer demand for, 5G broadband services, additional Commission actions will be required to make spectrum available for this use. Satellite is expected to serve a complementary role to the terrestrial network for 5G, especially in

²⁸ See, e.g., *Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, Report and Order, 29 FCC Rcd 4610, 4692-93 ¶ 220 (2014) (adopting AWS-3 rules requiring successful coordination with federal government incumbents prior to operation in certain designated protection zones); *FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service That Share Terrestrial Spectrum*, First Report and Order, 16 FCC Rcd 11511, ¶ 1 (2001) (adopting licensing rules for very small aperture terminal, or "VSAT," earth station operations in C-band spectrum shared on a co-primary basis with terrestrial fixed microwave-systems, and requiring completion of frequency coordination for each earth station antenna prior to operation).

²⁹ See Middle Class Tax Relief and Job Creation Act of 2012, Pub. Law No. 112-96 §§ 6401-6414, 126 Stat. 156, 222-37 (2012).

³⁰ See S.19, 115th Cong. (2017), as incorporated in H.R. 1625, 115th Cong. (2018).

³¹ 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), Order on Reconsideration and Second Report and Order, 31 FCC Rcd 5011 (2016).

rural and remote areas where consumers might be left behind without access to broadband satellite services. Other wireless technologies, such as high altitude platforms and Wi-Fi, also anticipate playing a role. Accordingly, in order to ensure the success of 5G and broadband access for all users, it is critical that additional spectrum be made available across platforms in a balanced (but not necessarily equal) manner.

To ensure that consumers can have access to the technologies that best meet their needs, the Commission must follow the principle of enabling competition among platforms by ensuring that no single platform is favored. First, to the extent additional spectrum is cleared and made available for 5G, it should not be made available simply for one technology – whether satellite or terrestrial wireless. While the split between platforms does not have to be 50-50, it should take into account the consumer demand for access to different platforms, and the role that these platforms will play generally and in different geographic areas of the country.

Second, with regard to facilitating sharing of spectrum, such as the millimeter wave bands above 24 GHz, the same technological neutrality principle must be followed. For frequency bands with incumbent operations, it is critical that any sharing criteria adopted be reasonable and enable both incumbent and new services (including satellite broadband) to grow. In addition, in some bands, such as where ubiquitous user terminals are planned, dedicated spectrum for satellite is appropriate. The Commission adopted rules in Spectrum Frontiers that provide for both dedicated and shared frequency bands for satellite broadband in several of the millimeter wave bands.³² While this is a good start, the Commission, in conjunction with its government partners, should export this approach internationally at the 2019 World

³² *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, FCC 18-73 (June 8, 2018).

Radiocommunication Conference, where use of these same bands is being considered. Failure to provide international harmonization will violate the principle of technology neutrality by creating a technical regulatory advantage for terrestrial wireless over satellite capabilities. Additionally, failure to harmonize spectrum regionally and internationally creates a significant technical barrier and competitive hurdle for satellite providers, thereby endangering:

- the emergence of existing and planned next generation satellite networks – both commercial and government;
- U.S. national space policy of enabling the use of commercial satellite systems to meet the growing communications needs of our government agencies; and
- the ability of the United States and others to bridge the digital divide at home and abroad.

Lack of harmonization will balkanize the satellite marketplace, depriving U.S. satellite and satellite equipment manufacturers of next generation commercial satellite manufacturing and exports, built in the United States, using a skilled workforce, and jeopardizing United States leadership in commercial space.

Until advanced sharing technologies (such as cognitive radios) are proven, sharing between widely deployed services, such as mobile wireless devices and satellite broadband user terminals, should be limited. Accordingly, as the Commission recognized in the *Spectrum Frontiers* proceeding, retaining some exclusive spectrum is still necessary. The Commission must follow a holistic approach to spectrum management to plan for the future, ensuring that there is competition among platforms and that growing consumer demands for all applications and uses can be met, including for fixed broadband.

V. CONCLUSION

The Commission should find that the deployment of advanced telecommunications capability is reasonable and timely. In view of the importance of satellite broadband in the deployment of advanced telecommunications capability to rural, remote, and underserved areas,

and in response to disasters, the Commission should continue to include satellite broadband in its broadband deployment analysis and meaningfully evaluate the latest available satellite broadband deployment data. The Commission should also spur broadband deployment by removing regulatory barriers to investment and ensuring sufficient spectrum access for satellite broadband.

Respectfully submitted,

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