

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

In the Matter of )  
 )  
Inquiry Concerning the Deployment of Advanced )  
Telecommunications Capability to All Americans in )  
a Reasonable and Timely Fashion, and Possible ) GN Docket No. 14-126  
Steps to Accelerate Such Deployment Pursuant to )  
Section 706 of the Telecommunications Act of )  
1996, as Amended by the Broadband Data )  
Improvement Act )  
 )

To: The Commission

**COMMENTS OF HUGHES NETWORK SYSTEMS, LLC**

**I. INTRODUCTION**

In these comments, Hughes Network Systems, LLC (“Hughes”), the nation’s largest satellite internet service provider, responds to the *Tenth Broadband NOI*.<sup>1</sup> Hughes welcomes this opportunity to comment on the deployment of advanced telecommunications capability to all Americans, but is concerned that the Commission is orienting the broadband progress report so that it is contrary to the FCC’s long history of technology neutrality.

As the Commission has recognized, satellite broadband technology plays an important role in providing broadband services to all Americans, “particularly [in] serving remote and sparsely populated areas.”<sup>2</sup> Indeed, because of satellite broadband services, advanced telecommunications capabilities are currently being deployed to all Americans in a reasonable

---

<sup>1</sup> *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Dkt No. 14-126, Tenth Broadband Report Notice of Inquiry, FCC 14-113 (rel. Aug. 5, 2014) (“*Tenth Broadband NOI*”).

<sup>2</sup> FCC, Guide, Getting Broadband, <http://www.fcc.gov/guides/getting-broadband> (last visited Sept. 4, 2014).

and timely fashion. Accordingly, Hughes supports inclusion of satellite broadband in the FCC's report on the deployment of advanced telecommunications capability.<sup>3</sup>

With regard to the Commission's proposed benchmarks, the market should decide whether a particular service falls within the definition of advanced telecommunications capability, and the imposition of arbitrary benchmarks is unnecessary. However, if the FCC decides to utilize benchmarks, Hughes supports a speed benchmark of 10 Mbps/1 Mbps as a reasonable speed requirement. In all regards, Hughes has serious concerns about the proposed 100 millisecond latency benchmark. Signals travelling at the speed of light from geostationary satellites cannot physically traverse the distance from earth to space in less than 100 milliseconds. The Commission's proposed latency threshold thus results in a categorical exclusion of a satellite broadband technology, contrary to the technology-neutral assessment required by Section 706 of the Telecommunications Act of 1996 and Commission precedent.

## **II. BACKGROUND**

Hughes is the global leader in providing broadband satellite networks and services for enterprises, governments, small businesses, and consumers. Having pioneered the very small aperture terminal ("VSAT"), Hughes is the world's leading provider of enterprise VSAT services and has built on this expertise to bring high speed satellite broadband service to consumers and small businesses across the United States. Hughes currently provides satellite Internet service to approximately 935,000 U.S. subscribers utilizing its Jupiter 1 (EchoStar XVII) and SPACEWAY

---

<sup>3</sup> Hughes also supports including satellite Internet services in the *Fourth International Broadband Data Report*, which will provide the Commission with a more comprehensive and accurate comparison of broadband deployment between the United States and other countries. See *Tenth Broadband NOI*, ¶ 51.

3 satellites with speeds up to 15 Mbps/2 Mbps.<sup>4</sup> Hughes also has plans to launch a new high-throughput satellite in 2016 which will increase its network capacity.<sup>5</sup>

Since the inception of its satellite broadband service, Hughes has been providing a variety of important internet-based services to U.S. subscribers, especially those living or working in rural communities, or in areas with limited terrestrial broadband build-out.<sup>6</sup> Furthermore, these services are invaluable during emergencies when the terrestrial infrastructure becomes unavailable. For example, in the aftermath of Hurricane Sandy, Hughes provided Internet and voice services to the affected communities when terrestrial and wireless networks failed or were unreliable.<sup>7</sup>

### **III. HUGHES' SATELLITE INTERNET SERVICE FALLS WITHIN THE DEFINITION OF ADVANCED TELECOMMUNICATIONS CAPABILITY AND SHOULD BE INCLUDED IN THE PROGRESS REPORT**

Under Section 706 of the Telecommunications Act of 1996, as amended, advanced telecommunications capability is defined as a “high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice,

---

<sup>4</sup> EchoStar Corporation, Quarterly Report, Form 10-Q at 40 (Aug. 7, 2014) (“[S]ubscribers include subscriptions with HughesNet services, through retail, wholesale and small/medium enterprise service channels.”); HughesNet, <http://www.hughesnet.com/index.cfm?page=Plans-Pricing> (last visited Sept. 4, 2014).

<sup>5</sup> Hughes plans to launch and bring into use the Jupiter 2 (EchoStar XIX) satellite. The satellite “will have more than 150 Gbps throughput – 50 percent greater capacity than the Jupiter 1/EchoStar 17 satellite launched [in July of 2012] – with a next-generation architecture having more than 120 spot beams, providing high quality Internet coverage across the U.S.” Jeffrey Hill, *Hughes Drops Big News at SATELLITE 2013 with SSL Jupiter 2 Deal*, Satellite Today, Mar. 21, 2013, <http://www.satellitetoday.com/telecom/2013/03/21/hughes-drops-big-news-at-satellite-2013-with-ssl-jupiter-2-deal/>.

<sup>6</sup> See Press Release, HughesNet, Nov. 12, 2012, Rapid Start for HughesNet Gen4 Satellite Internet Service in First 30 Days of Operation, (quoting a customer “for anyone who lives in a remote area with no available DSL or cable service, the new HughesNet Gen4 Internet service is the only way to go.”); Press Release, HughesNet, Apr. 28, 2010, Satellite Internet Access Helps Build Community; Keeps Rural Americans Connected to the World; Press Release, HughesNet, Jan. 25, 2010, Hughes Surpasses Major Milestone, 500,000 Subscribers to HughesNet High-Speed Satellite Internet Access Service (“HughesNet Internet access at the local library has enabled the town’s 100 residents to take distance learning classes, conduct research, and shop online, giving them access to stores that are a four-hour car ride away.”).

<sup>7</sup> Press Release, Hughes, Jun. 3, 2013, Hughes Announces New Emergency Networking Solutions for Hurricane Season.

data, graphics, and video telecommunications using any technology.”<sup>8</sup> Satellite broadband clearly meets this definition. For example, utilizing Hughes’ satellite broadband services, customers have the ability to browse the Internet at high speeds, send and receive emails, view and upload photos, stream audio, share and communicate on social networking sites, stream video from websites like Blockbuster On Demand, Netflix and Hulu, use video conferencing and voice services, and engage in distance learning, telecommuting, and telehealth activities.<sup>9</sup> Satellite broadband users are able to access the same services as customers of terrestrial broadband providers at cost effective rates. Thus, satellite broadband should be included in the report in order to ensure there is an accurate picture of providers of advanced telecommunications capability in the United States.<sup>10</sup>

#### **IV. THE COMMISSION SHOULD BE GUIDED BY THE LONG-STANDING PRINCIPLE OF TECHNOLOGY NEUTRALITY AND SHOULD REJECT BENCHMARKS THAT STRAY FROM THAT PRINCIPLE**

Under Section 706 of the Telecommunications Act of 1996, as amended, advanced telecommunications capability is defined “*without regard to any transmission media or*

---

<sup>8</sup> 47 U.S.C. § 1302(d)(1) (emphasis added).

<sup>9</sup> A 10 Mbps download speed benchmark is reasonable because, at this speed, customers are able to stream video from websites like Blockbuster On Demand, Netflix and Hulu, use video conferencing services, as well as VoIP. In addition, at a speed of 1 Mbps upload, Hughes’ customers can upload photos and videos to social networking websites or cloud-based hosting sites. While the proposed speed benchmark is reasonable, Hughes cautions against the Commission using this benchmark as a future mechanism for implementing a minimum speed for all broadband providers. Today there are certain U.S.-based subscribers who choose to utilize Internet speeds of less than 10 Mbps/1 Mbps. Consumers should not be forced to subscribe to telecommunications services they do not require.

<sup>10</sup> See Comments of Verizon and Verizon Wireless at 2, GN Dkt No. 12-228 (filed Sept. 20, 2012) (“Section 706 clearly states that “[t]he term ‘advanced telecommunications capability’ is defined, without regard to any transmission media or technology,” “using any technology,” and there is no reason to evaluate . . . satellite broadband separately from fixed terrestrial broadband service offerings.”); Reply Comments of Verizon and Verizon Wireless at 2, GN Dkt No. 12-228 (filed Oct. 22, 2012) (“The record confirms that the Commission’s analysis of broadband availability should include . . . satellite broadband.”). See also Bringing Broadband to Rural Am.: Report on a Rural Broadband Strategy at 4, available at [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-291012A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-291012A1.pdf) (“[S]atellite broadband, with its near ubiquitous coverage . . . can provide a much-needed connection in rural areas, especially where other broadband solutions are not viable for technical or other reasons.”) (“Rural Broadband Report”).

*technology*” and explicitly refers to the ability of users to “to originate and receive high-quality voice, data, graphics, and video telecommunications *using any technology*.”<sup>11</sup> Accordingly, on the face of the statute, Congress requires the FCC to utilize a technology-neutral approach for the broadband progress report.

The FCC has a long history of embracing technology neutrality in crafting its regulations and decisions in order to foster a competitive marketplace where different technologies compete and thrive. There is no reason to depart from that precedent.<sup>12</sup> Unfortunately, despite the long-standing requirement for technology neutrality, the FCC proposal for 100 millisecond latency would favor wireline technology and would effectively disqualify spectrum-based technologies,

---

<sup>11</sup> 47 U.S.C. § 1302(d)(1) (emphasis added).

<sup>12</sup> See, e.g., *Expanding Access to Broadband and Encouraging Innovation through Establishment of an Air-Ground Mobile Broadband Secondary Service for Passengers Aboard Aircraft in the 14.0-14.5 GHz Band*, Notice of Proposed Rulemaking, 28 FCC Rcd 6765, 6796 ¶ 101 (2013) (“We strive to establish technology neutral rules that allow for competing technologies and changes in technology over time without the need to change our rules.”); *The Proposed Extension of Part 4 of the Commission’s Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers*, Report and Order, 27 FCC Rcd 2650, 2656 ¶ 9 (2012) (“The outage reporting threshold that we adopt today for interconnected VoIP service is technology-neutral in that it mirrors the existing standard applied to other services covered under Part 4 of the Commission’s rules.”); Rural Broadband Report at 34, 56, n. 327 (“[D]ecision makers should proceed on a technology-neutral basis—by considering the attributes of all potential technologies—in selecting the technology or technologies to be deployed in a particular rural area. . . . Specifically, the Communications Act requires that universal service policies be based on the following principles: . . . [s]uch other principles as the [Federal-State Joint Board on Universal Service] and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this Act. The Commission adopted the additional principle that federal support mechanisms should be competitively and technologically neutral.” (citations omitted); See *Federal-State Joint Board on Universal Service*, Report and Order, 12 FCC Rcd 8776, 8858 ¶ 145 (1997) (“[A]ny wholesale exclusion of a class of carriers by the Commission would be inconsistent with the language of the statute and the pro-competitive goals of the 1996 Act.”); *Revision of the Commission’s Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Memorandum Opinion and Order, 12 FCC Rcd 22,665, 22,668 ¶ 5 (1997) (“We also reemphasize that our rules are intended to be technology-neutral . . .”); *Revision of the Commission’s Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Request of King County, Washington*, Order on Reconsideration, 17 FCC Rcd 14,789, 14,794-95 ¶ 13 (2002) (“The Commission has strenuously avoided solutions that are other than technology-neutral in crafting regulatory requirements for E911 implementation.”); Chairman Julius Genachowski Remarks on Modernizing and Streamlining the Universal Service Fund, The Information Technology And Innovation Foundation, Washington, DC, available at 2011 FCC LEXIS 165 (“A technology-neutral approach is key to putting scarce resources to the best possible use.”); Letter from Olympia J. Snowe, United States Senator, to Julius Genachowski, Chairman, Federal Communications Commission, Oct. 22, 2009, available at 2009 FCC LEXIS 6657 (“Differences in regulation could present an unfair competitive advantage and infringe on the Commission’s long-held technology-neutral approach.”).

like satellite. In fact, use of such a benchmark would exclude all geostationary satellite systems and some non-geostationary satellite systems from being included in the broadband deployment report. The difference in latency between satellite and wireline infrastructure, however, does not preclude the effective use of real-time broadband voice or video applications via satellite.<sup>13</sup> Further, the technical and operational differences between wireline and satellite networks by definition mean that there is less latency in wireline communications than satellite communications.<sup>14</sup>

IP links through geostationary broadband satellite systems achieve a latency that typically ranges between 500 and 750 milliseconds.<sup>15</sup> So, if the FCC adopts an average latency benchmark, Hughes urges the FCC to utilize 750 milliseconds as a metric in order to fully encompass various satellite deployments and network configurations.<sup>16</sup> Using the most

---

<sup>13</sup> Hughes has developed and implemented technologies to help reduce the effect of the longer latency times. See Steve Schuster, *Satellite Broadband Internet Demand Increases Prompting Change in Hughes, ViaSat Business, Via Satellite*, Jul. 19, 2013, <http://www.satellitetoday.com/telecom/2013/07/19/satellite-broadband-internet-demand-increases-prompting-change-in-hughes-viasat-business/>. Moreover, “satellite broadband networks have low jitter (fluctuations in latency)”, so “applications such as distance learning, telecommuting activities, and telehealth work extremely well over satellite.” Joint Comments of Satellite Broadband Providers at 11, WC Dkt No. 10-90, *et al.* (filed Apr. 18, 2011).

<sup>14</sup> FCC, *2014 Measuring Broadband America Fixed Broadband Report: A Report on Consumer Fixed Broadband Performance in the U.S.* at 16 (2013) (“2014 Measuring Broadband Report”). Mobile wireless networks, another spectrum-based technology, are also unlikely to meet a 100 millisecond benchmark. Both CTIA and Hughes objected to a 100 millisecond latency requirement in the Connect America Fund proceeding. See Comments of CTIA – The Wireless Association, WC Dkt No. 10-90, *et al.*, at 3 (filed Aug. 8, 2014) (“latency . . . requirements should not be set at levels that categorically exclude spectrum-based providers.”), and Comments of DISH Network L.L.C. and Hughes Network Systems, LLC, WC Dkt No. 10-90, *et al.*, at 3-4 (filed Aug. 8, 2014).

<sup>15</sup> The latency for IP packets on a satellite link is impacted by three factors: (1) the time required for a signal to travel from the earth to the satellite and back which will range between 240 to 280 milliseconds, depending on the location of the transmitting and receiving earth stations, see Satellite Signals, <http://www.satsig.net/latency.htm> (last visited Sept. 4, 2014); (2) the packet travel time between the satellite gateway stations and the destination IP address; and (3) the time necessary for buffering, interleaving, channel signaling and coding by the satellite modem. While (1) is deterministic, (2) is dependent on the specific routing to the final address and (3) will vary depending on equipment configuration. In Hughes’ experience, the round trip latency when taking all three factors into account will in most cases range between the theoretical minimum of 500 milliseconds and 750 milliseconds.

<sup>16</sup> The round trip average latency value of 750 milliseconds put forward by Hughes would provide an outer bound in which broadband by satellite could reasonably operate. The 2014 Measuring Broadband Report observed an average latency for the one satellite operator it measured to be of 671.1 milliseconds, which would be well within the proposed threshold. See 2014 Measuring Broadband Report at 16.

permissible value of latency would allow the Commission to take into account all relevant technologies, on a technology neutral basis, including satellite broadband.

Ultimately, the Commission should not be intervening in the broadband market by picking business models as winners at the expense of others, and excluding certain broadband services in the report will not provide an accurate picture of broadband deployment in the country. Accordingly, the FCC should be relying on the marketplace and not imposing any benchmarks to determine if a service falls within the definition of advanced telecommunications capability. However, if it chooses to adopt benchmarks, it should only adopt ones that are technology neutral.

## **V. CONCLUSION**

Satellite broadband, with its virtually ubiquitous reach, plays an important role in deploying advanced telecommunications capability to all Americans, and the service should be included in the report. Consistent with precedent and policy, the FCC must ensure its broadband reporting is technology neutral.

Respectfully Submitted,

/s/  
Jennifer A. Manner  
Vice President, Regulatory Affairs  
Jesse T. Jachman  
Senior Counsel, Regulatory Affairs  
Hughes Network Systems, LLC  
11717 Exploration Lane  
Germantown, MD 20876

September 4, 2014