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October 15, 2014

VIA ECFS

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: *Notice of Ex Parte Presentation – Latency Requirements for Participation in High-Cost Support Mechanisms (WC Docket No. 10-90; WT Docket No. 10-208; WC Docket No. 14-58; WC Docket No. 07-135; CC Docket No. 01-92)*

Dear Ms. Dortch:

On October 14, 2014, EchoStar Corporation ("EchoStar") and Hughes Network Systems ("Hughes") met with staff from the Wireline Competition Bureau to discuss latency requirements for entities to participate in the Commission's high-cost universal service programs in the above-referenced dockets.[1] EchoStar and Hughes were represented by Jennifer A. Manner, Vice President, Regulatory Affairs, EchoStar; Steven Doiron, Senior Director, Regulatory Affairs, Hughes; and undersigned counsel. Commission staff attending the meeting were Rodger Woock, Alexander Minard, Suzanne Yelen, Alec MacDonell, and Christopher Cook.

In the meeting, the presentation by EchoStar and Hughes followed the attached deck, which was distributed to the attendees.

Respectfully submitted,

WILKINSON BARKER KNAUER, LLP

/s/
L. Charles Keller

cc: FCC attendees

Attachment

[1] *See, e.g.*, *Connect America Fund, et al.*, WC Docket No. 10-90 *et al*., Report and Order, Declaratory Ruling, Order, Memorandum Opinion and Order, Seventh Order on Reconsideration, and Further Notice of Proposed Rulemaking, 29 FCC Rcd 7051 (2014).

Satellite Broadband as a Competitor in Rural America

October 2014

About EchoStar

- Global company, customers in over 100 countries
- Over 4,200 employees worldwide
- 30+ year history in communications technology
- Multibillion-dollar public company (NASDAQ: SATS)
- Worldwide manufacturing operations
- Market-driven engineering organization with broad technical skillsets and record of significant patents
- US-headquartered company performing full management and operations of spacecraft

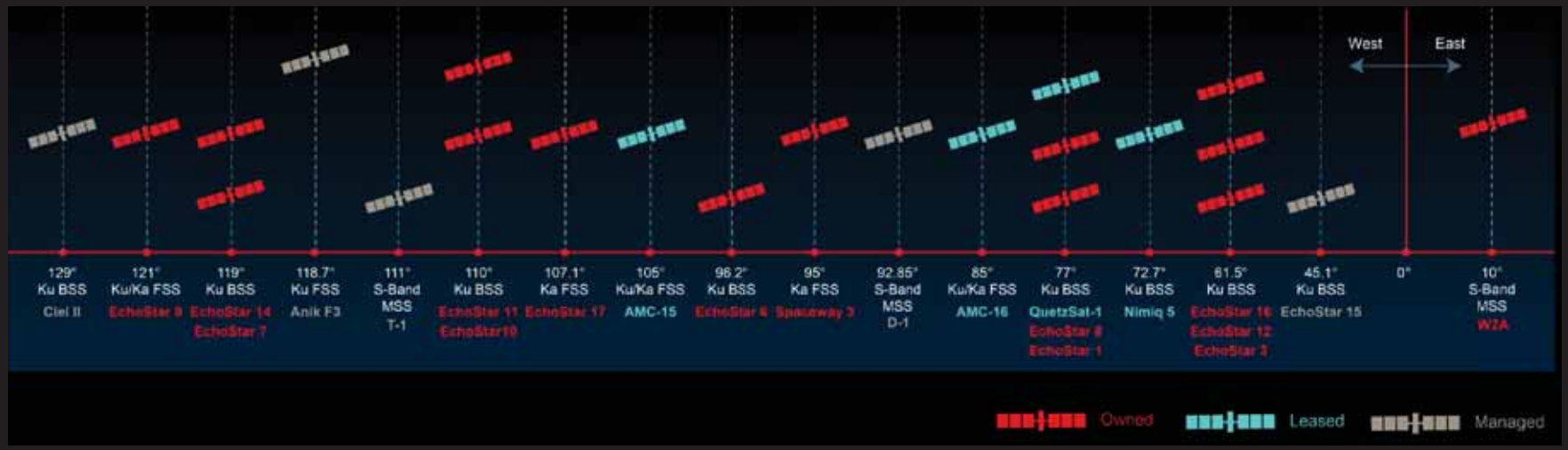
Company Structure

Locations

Global Headquarters
Englewood, CO, USA

EchoStar Satellite Fleet

Manage World's 4th Largest Commercial Fleet



- 22 owned, leased, and managed satellites*
  - 13 Owned
  - 4 Leased
  - 5 Managed
- Satellites Under Construction
  - EchoStar 19
  - EchoStar 21

*Orbital locations as of 3/1/2014. Total of 22 excludes S-Band payload at 10° E.

Satellite Solutions

Broadcast Satellite Services (BSS)

- Capacity for Direct-to-Home (DTH) service providers
- DISH Network and Dish Mexico

Fixed Satellite Services (FSS)

- Full time capacity for enterprise, broadcast, and government services applications
- Part time capacity leases

Mobile Satellite Services (MSS)

- Leased capacity for broadband applications

High-Speed Satellite Internet

- Largest Consumer Satellite Internet Service in North America
- Approx. 900,000+ subscribers in U.S. and Canada*
- Target unserved market >10M households
- High-speed offerings (up to 15Mbps), plus voice (VoIP)

HughesNet® Gen4

*As of Q1 2014

Broadband for Enterprise

- Leading provider of managed network services to large blue-chips & medium/small enterprises, with operating entities in Europe, India & Brazil
- Largest developer/supplier of satellite networks & terminals to operators and enterprises globally

- Industries include:
  - Retail
  - Oil & Gas
  - Restaurant
  - Finance
  - Lottery

Broadband for Government

- High-availability & security networks
- Custom connectivity & tailored solutions: land/sea/air
  - Distance Education
  - Law Enforcement
  - Field Offices and Teleworking
  - Homeland Security
  - Defense & Intelligence
  - Emergency Response

HUGHES

Satellite broadband is a successful part of the competitive consumer broadband market

- Today many U.S. consumers have a choice in broadband service providers. Some consumers take cable, some take ILEC-provided fiber, others DSL, and still others satellite.
  - Many consumers prefer satellite broadband over terrestrial alternatives
  - A substantial number of our customers have at least one other terrestrial competitive broadband service available in their local area, and in many areas there are two or more competitors. In addition, an even larger number of our customers live in areas where LTE is available.
  - Since so many of our customers have competitive broadband choices available to them, this demonstrates that U.S. consumers value choice in their broadband services. It is clear that factors other than just latency and speed make a difference – whether that is customer service, quality, cost, or something else

Unattainable latency standards would arbitrarily reduce consumer choice

- As a result of physical differences, latency is higher with satellite broadband services than with terrestrial services.
  - The time it takes for electromagnetic radiation (EMR) to go from Earth to a satellite in geostationary orbit (GSO) and back varies from 239 to 278 milliseconds. The data takes nominal additional time to get from the gateway to the final destination.
  - Round trip time (RTT) typically varies between 500 to 750 milliseconds, (This is double the time required in the previous bullet since RTT is the time it takes a packet sent from the user to get to a server on the internet and return to the user).
- Thus, the laws of physics make compliance with a 100 millisecond threshold impossible for broadband provided via GSO satellites.
- Latency values seen over satellite links are acceptable for most applications per accepted International Telecommunications Union (ITU) standards (Recommendation ITU-T G.114) (see attached Annex A).
  - Voice: latency up to 400 milliseconds (from mouth to ear) has been found acceptable under ITU standards.
  - Transfers/video streaming: performance has been found acceptable under ITU standards; broadband satellite providers also use windowing, proxies and other schemes to ensure transfer process flows smoothly.
  - Browsing : Performance is excellent given high speed available. Satellite broadband providers also use caching, compression and other schemes to accelerate browsing

Annex A
(Recommendation ITU-T G.114)

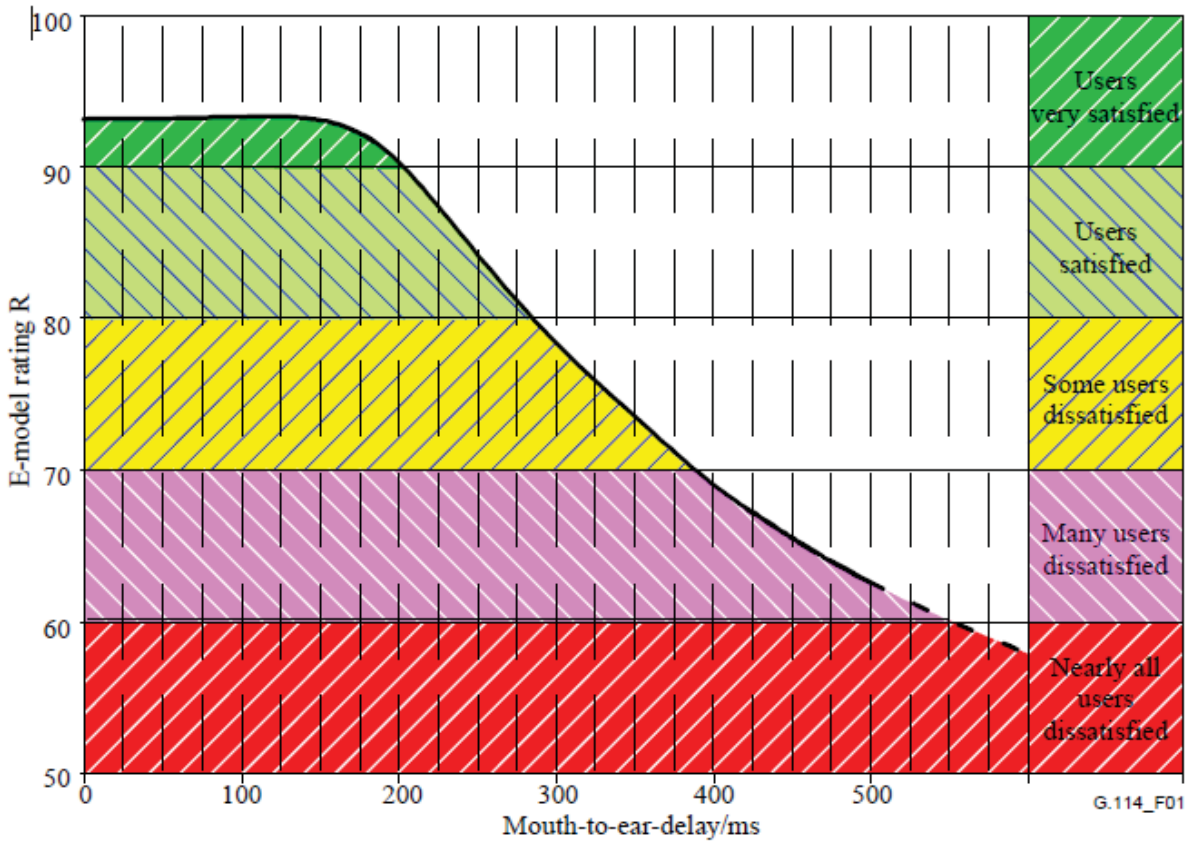


Figure 1/G.114 – Determination of the effects of absolute delay by the E-model