

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION**

In the Matter of: Certain Semiconductor Devices, Semiconductor Packages, and Products Containing Same
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Inv. No. 337-TA-1010
82 Fed. Reg. 46519

**COMMENTS OF PUBLIC KNOWLEDGE
AND THE OPEN TECHNOLOGY INSTITUTE AT NEW AMERICA**

The following comments are respectfully submitted in response to the Notice and Request for Briefing dated October 5, 2017. The Notice seeks comment on the impact of an exclusion order or cease-and-desist order on the public interest factors enumerated in section 337(d)(1) and (f)(1). The commenters are public interest organizations who focus on consumer and public policy issues with regard to the Internet and new technologies.

In this investigation, any exclusionary remedy (either an exclusion order or a cease-and-desist order) will potentially have serious negative consequences on the public interest. The accused devices provide access to the Internet and other communications services. The Internet is of undeniable importance to key aspects of societal participation, including health care, education, emergency relief, and business entrepreneurship. Shrinking the supply of devices that enable Internet access would undermine these important interests and thereby harm the public health and welfare, competitive conditions, and United States consumers.

The discussion below proceeds as follows. Section I lays out the reasoning and evidence for why Internet access strongly implicates the public interest factors under section 337. Section II, pursuant to the Commission's request for identification of those "specific products of the respondents [that] most directly implicate the Commission's public interest factors," discusses categories of accused products and identifies the particular public interest concerns that each category raises.

I. The Strong Public Interest in Access to the Internet Should Weigh Heavily in Assessment of the Commission’s Public Interest Factors

Because many of the products accused in this investigation are those that provide access to the Internet, the Commission cannot determine an appropriate remedy without considering the importance of Internet access to the public interest determination.

Internet access is the foundation of many individual and public needs in daily life. The Internet is a primary medium for important civic and personal functions including education, job searching, health care, and 911 emergency services. Limiting the available supply of Internet access tools would work to diminish access to all these essential services, which are unquestionably critical to public health, safety, and welfare in the United States.

The commenters have presented evidence of this in previous comments filed before this Commission and elsewhere,¹ and use these comments to provide factual evidence on four facets of the importance of Internet access: health care, education, emergency response, and small businesses.

A. Access to the Internet Is a Vital Aspect of Modern Health Care Services

Exclusion of Internet access–enabling devices will impede the public’s access to medical services because those services increasingly depend the Internet: Health insurance management, appointment scheduling, and patient record keeping are all key elements of the health care system that have moved online. Doctors routinely use Internet services such as email and online web portals to communicate with and inform their patients.² Patients prefer this: According to one survey, 93% of adults prefer email communication with their physician.³

¹See Comments of Public Knowledge at 3, *In re Certain Consumer Elecs.*, Inv. No. 337-TA-932 (Nov. 13, 2015), *available at* <https://www.publicknowledge.org/documents/pk-comments-in-itc-337-ta-932>; Brief of Public Knowledge et al. as *Amici Curiae* in Support of Neither Party at 8–17, *BMG Rights Mgmt. (US) LLC v. Cox Commc’ns, Inc.*, No. 16-1972 (4th Cir. Nov. 14, 2016) [hereinafter *PK BMG Brief*], *available at* <https://www.publicknowledge.org/documents/pk-eff-cdt-amicus-brief-in-bmg-v-cox>.

²See V.K. Podichetty et al., *Assessment of Internet Use and Effects Among Healthcare Professionals: A Cross Sectional Survey*, 82 *POSTGRADUATE MED. J.* 274, 277 (2006).

³See CATALYST HEALTHCARE RESEARCH, 2014 “WHAT’S REASONABLE” STUDY: PATIENT EXPECTATIONS OF ONLINE VS. CONVENTIONAL ACCESS TO PROVIDERS 5 (July 2014), <http://catalysthcr>.

In addition to communicating with health care providers, many individuals also use Internet-based services to monitor and maintain their health. A Pew Research Center survey from 2013, for example, found that 19% of smartphone owners use a mobile device app or tool to track their health (a number that has likely risen dramatically in the last few years).⁴ Accurate, consistent health tracking appears to be especially important to those with chronic conditions or who experience significant health changes, providing them with valuable information to change their behaviors or improve their health.⁵

Access to the Internet thus serves important purposes in the public's access to quality health care. An exclusion order that increases barriers to Internet access would hinder effective communication with health care providers and consumers' ability to maintain personal health.

B. Internet Access Is Essential to Education at All Levels

As technology expands the realm of educational possibilities, the Internet has become intricately tied with education, to the point that it is all but necessary for learning. Students now rely on the Internet to do homework, conduct research, submit assignments, and generally explore knowledge and interests. For example, middle and high school teachers observe that 94% of their students are very likely to do research online.⁶ Indeed, 95% of those teachers required students to “do research or search for information online,” about three in four put assignments on the Internet, and about the same number required online submissions of assignments.⁷ As far back as 2001, over half of parents of teenagers reported that learning to use the Internet was “essential” for “young people to be successful in life.”⁸

com/white-paper/whats-reasonable/.

⁴See SUSANNAH FOX & MAEVE DUGGAN, PEW RESEARCH CTR., TRACKING FOR HEALTH 11 (Jan. 28, 2013), <http://www.pewinternet.org/2013/01/28/tracking-for-health/>.

⁵See *id.* at 14–15.

⁶See KRISTEN PURCELL ET AL., PEW RESEARCH CTR. ET AL., HOW TEENS DO RESEARCH IN THE DIGITAL WORLD 34 fig. (Nov. 1, 2012), <http://www.pewinternet.org/2012/11/01/how-teens-do-research-in-the-digital-world/>.

⁷See *id.* at 4.

⁸PRINCETON SURVEY RESEARCH ASSOCS. FOR THE PEW INTERNET IN AM. LIFE PROJECT, PARENTS, KIDS AND THE INTERNET SURVEY 1 (June 2001), <http://www.pewinternet.org/files/old->

The necessity of Internet access only increases as students enter college. Among 17-year-olds in 2005, 85% reported searching for colleges online.⁹ Once in college, nearly 79% of students feel that “Internet use has had a positive impact on their college academic experience.”¹⁰ College students rely on Internet access to communicate and develop relationships with professors, connect with classmates, and express ideas that they might otherwise not voice in class.¹¹

Use of the Internet is so integral to educational practices that, as one study concluded, the “very definition of what ‘research’ is has changed considerably in the digital world.”¹² If a student, especially one from a low-income family, is unable to access the Internet because the tools of access have become too expensive, that student will be at a disadvantage potentially for life. An exclusionary remedy that limits the availability of Internet access tools within the United States, then, undoubtedly impacts the public interest.

C. Internet Access Is a Necessary Tool in Emergency and Disaster Response

Current events have shown just how common natural disasters can be, the toll those disasters can take on victimized communities, and the massive efforts that must be put toward recovery. Internet access is a vital element of those emergency restorative services, in both the short and the long term.

In the aftermath of Hurricanes Maria and Irma, for example, residents of Puerto Rico were forced to rely on a few functional cell towers to contact family and receive news.¹³ The widespread damage to the wireless infrastructure left, and continues to leave, millions of Americans there

media/Files/Questionnaire/Old/PIP_Teens_Questionnaire.pdf.

⁹See Lee Rainie & Paul Hitlin, *The Internet at School*, PEW RES. CENTER (Aug. 2, 2005), <http://www.pewinternet.org/2005/08/02/the-internet-at-school/>.

¹⁰See Steve Jones et al., Pew Internet & Am. Life Project, *The Internet Goes to College: How Students Are Living in the Future with Today’s Technology* 8 (Sept. 15, 2002), http://www.pewinternet.org/files/old-media/Files/Reports/2002/PIP_College_Report.pdf.pdf.

¹¹See *id.* at 3–4.

¹²PURCELL ET AL., *supra* note 6, at 33.

¹³See, e.g., Richard Fausset, *For Puerto Ricans off the Island, a Struggle to Make Contact After Maria*, N.Y. TIMES (Sept. 22, 2017), <https://www.nytimes.com/2017/09/21/us/puerto-rico-communication-maria.html>.

struggling to reach the outside world and to coordinate aid responses: As Reuters reported, Puerto Ricans “pulled to the side of the road . . . clutching cellphones in search of one of the rarest finds on the island: a working mobile network.”¹⁴

Social media, and thus Internet service, has been a locus of disaster relief. Those in Houston trapped by Hurricane Harvey used Twitter as an ad-hoc 911 service where the phone lines were jammed to inoperability.¹⁵ That worked because Houston did not lose Internet service; in Puerto Rico, by contrast, individuals “resorted to painting ‘Help’ and ‘Send Food’ on roads, buildings and signs, in the hopes of being spotted.”¹⁶

Historical natural disasters provide a roadmap for what is needed for recovery, and Internet services play a central role. Following the 2011 tsunami in Japan (most infamous for the resulting Fukushima nuclear meltdown), it was reported that replacement was required for about 14,800 cell towers, 2,300 fiber Internet connections, and 12,000 fixed subscriber lines.¹⁷ Additionally, Internet services were used for tracking evacuees, identifying available government services, locating evacuation centers and emergency kitchens, and setting up message boards for identifying loved ones.¹⁸

The United States government also relies on the Internet to propagate warnings of impending weather events or other natural disasters, important for allowing for advance preventative action. The Wireless Emergency Alert system, for example, is a government-backed framework “to enable commercial mobile service alerting capability for commercial mobile service providers

¹⁴Robin Respaut & Dave Graham, *With Cell Service Crippled, Puerto Ricans Look Skyward for a Signal*, REUTERS (Sept. 28, 2017), <https://www.reuters.com/article/us-usa-puertorico-communication/with-cell-service-crippled-puerto-ricans-look-skyward-for-a-signal-idUSKCN1C30FA>.

¹⁵See Marina Koren, *Using Twitter to Save a Newborn from a Flood*, THE ATLANTIC (Aug. 28, 2017), <https://www.theatlantic.com/technology/archive/2017/08/harvey-rescue-twitter/538191/>.

¹⁶Respaut & Graham, *supra* note 14.

¹⁷See Int’l Policy Div., Global ICT Strategy Bureau of Japan’s Ministry of Internal Affairs & Commc’ns, *Japan After the Earthquake and Tsunami: Update on the Restoration of Telecommunication and Broadcasting Services*, ITU NEWS, July–Aug. 2011, at 32, 32–33, available at http://www.itu.int/net/itunews/issues/2011/06/pdf/201106_32.pdf.

¹⁸See *id.* at 35.

that voluntarily elect to transmit emergency alerts.”¹⁹ Since its introduction in 2012, the system has transmitted “over 21,000 emergency alerts, including severe weather warnings, evacuate and shelter-in place alerts, and America’s Missing: Broadcast Emergency Response (AMBER) Alerts.”²⁰

An exclusionary remedy that limits the tools of Internet access would thus have harmful impact upon the public’s ability to prepare for and recover from all manner of emergencies and natural disasters. It is no exaggeration to say that Internet service can save lives in these situations, reflecting again the paramount importance of Internet access for consumers.

D. Small Businesses Increasingly Rely on Internet Access for Operations

Economic growth today depends on Internet access, especially when it comes to small businesses. The number of small businesses with websites increased from under 50% in 2016, to over 70% today.²¹ About half of small businesses also engage in digital marketing.²² Internet access offers numerous benefits to small businesses: It increases their ability to market to global audiences, saves them time and labor, and assists in tracking and managing analytic and marketing data.²³ Those businesses without access will be at a disadvantage in reaching consumers and managing transactions, especially on any scale larger than local. In this marketplace, a business without the tools of Internet access is simply uncompetitive.

Exclusion of Internet access tools would potentially harm small businesses and their entrepreneurs and employees, costing jobs and economic growth. It would be harmful to the public welfare and United States consumers to hinder the operations of small businesses.

¹⁹Warning, Alert, and Response Network Act, 35 U.S.C. § 1201(a).

²⁰*In re* Wireless Emergency Alerts, 31 F.C.C.R. 11112, ¶ 6, at 11115–16 (FCC Sept. 29, 2016) (report and order and further notice of proposed rulemaking).

²¹See Amelia Peacock, *Small Business Websites in 2017: Survey*, CLUTCH.CO (Mar. 14, 2017), <https://clutch.co/web-designers/resources/small-business-2017-website-survey>.

²²See Sarah Patrick, *Small Business Digital Marketing and Social Media Habits in 2016: A Survey*, CLUTCH.CO (Mar. 22, 2017), <https://clutch.co/agencies/resources/small-business-digital-marketing-and-social-media-habits-survey-2016>.

²³See *id.*

II. Exclusionary Remedies Should Be Limited for at Least the Following Categories of Products

In view of the Commission’s request to develop the record as to “which specific products of the respondents most directly implicate the Commission’s public interest factors,” the following discussion applies the aforementioned public interest considerations to categories of products accused in this investigation.

The list of accused products does not necessarily contemplate every potentially infringing product in each category noted below; for example, many popular cell phones on the market are not accused here. Nevertheless, it would make little sense for the Commission to rely on the availability of those non-accused products to somehow alleviate public interest concerns. The complainant is free to seek further investigations on those products—and indeed, already has.²⁴ It is no better for the public interest that the Commission exclude an entire market of products piecemeal rather than in a single turn.

A. Mobile Phones and Smartphones

Among other things, this investigation concerns certain Wi-Fi chips manufactured by Broadcom and installed in a variety of devices, including smartphones and other mobile phones. Exclusion of mobile phone devices would significantly disrupt the markets for these devices because the relevant chips are ubiquitously incorporated into those devices—they are reportedly “built into the vast majority of iPhones,” and also “used by most major Android smartphone makers including HTC, Google, LG and Samsung.”²⁵ Analysts similarly report that “Broadcom is the leading supplier for wireless combo chips (Wi-Fi, Bluetooth and GPS) for mobile phone and consumer wireless platforms.”²⁶

²⁴*In re* Certain Wafer-Level Packaging Semiconductor Devices, 82 Fed. Reg. 46283 (USITC Oct. 4, 2017).

²⁵Gordon Kelly, *Apple iOS 10.3.3 Has a Great Secret Feature*, FORBES (July 23, 2017), <https://www.forbes.com/sites/gordonkelly/2017/07/23/apple-ios-10-3-3-update-guide-features-broadpwn-iphone/#19f59b6b3b36>.

²⁶Masao Kuniba et al., *With Deal to Buy Broadcom, Avago Aims to Dominate Communication Markets*, GARTNER INC. (June 4, 2015), <https://www.gartner.com/doc/3070017/deal-buy->

Mobile devices are a primary—the only for some—tool for accessing the Internet, and accordingly exclusion of such devices implicates the concerns noted above for disaster relief, business operations, health care access, and education, among others. In particular, several of the uses of the Internet described above function solely or most effectively on mobile cell phone devices: College students are increasingly more likely to use mobile devices to complete coursework,²⁷ and the Wireless Emergency Alert system is only operational on mobile phones.²⁸

The market effects of exclusion of mobile phones would be especially felt by two particular communities: low-income individuals and rural users. The special impact on these groups should give the Commission additional pause in considering the public interest.

Importance to Low Income and Minority Individuals. Exclusion of cell phone devices would most strongly impact low income communities, both because raised prices resulting from diminished supply will most directly impact those without means, and because of patterns of Internet use. Cell phones may not appear to cost much but they are out of reach for many low-income households already: “Roughly three-in-ten adults with household incomes below \$30,000 a year don’t own a smartphone.”²⁹

Even when a cell phone is affordable, fixed broadband Internet service at home may not be, and so many low-income households rely solely on cell phones or mobile devices for Internet service. United States Census Bureau data revealed that “low-income households that used the Internet at home were significantly more likely to depend on a mobile data plan than those with higher incomes.”³⁰ And a 2015 study found that 21% of households with income under \$20,000

broadcom-avago-aims.

²⁷ See PEARSON STUDENT MOBILE DEVICE SURVEY 2015, NATIONAL REPORT: COLLEGE STUDENTS (June 2015), <https://www.pearsoned.com/wp-content/uploads/2015-Pearson-Student-Mobile-Device-Survey-College.pdf>.

²⁸ See *In re* Wireless Emergency Alerts, 31 F.C.C.R. 11112, ¶ 7, at 11116–17 (FCC Sept. 29, 2016) (report and order and further notice of proposed rulemaking).

²⁹ Monica Anderson, *Digital Divide Persists Even as Lower-Income Americans Make Gains in Tech Adoption*, PEW RES. CENTER (Mar. 22, 2017), <http://www.pewresearch.org/fact-tank/2017/03/22/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/>.

³⁰ Giulia McHenry, *Evolving Technologies Change the Nature of Internet Use*, NAT’L TELECOMM. &

a year fit this pattern.³¹ Diminished supply resulting from exclusionary remedies will result in increased prices that can cut off low-income families not just from mobile phones, but from all forms of home Internet access entirely.³²

Perhaps most strikingly, an increase in costs of Internet service could exacerbate racial inequality, because minorities are especially sensitive to Internet access pricing. A 2016 study found that most households choose among Internet access options based on reliability, speed, and affordability, but “Hispanic and Black households with home internet rank service affordability as their top concern.”³³ The same study reports that “people of color . . . are more likely to rely solely on mobile wireless,” largely for cost reasons.³⁴ They are also more likely to use the Internet to find a job.³⁵ Increased costs of cell phone devices resulting from lower United States supply would thus disproportionately impact minorities.

INFO. ADMIN. (Apr. 19, 2016), <https://www.ntia.doc.gov/blog/2016/evolving-technologies-change-nature-internet-use>.

³¹See JOHN B. HARRIGAN & MAEVE DUGGAN, PEW RESEARCH CTR., HOME BROADBAND 2015, at 9 tbl. (2015), available at <http://www.pewinternet.org/files/2015/12/Broadband-adoption-full.pdf>.

³²Public Internet access facilities, such as restaurants and libraries, are not an adequate substitute for home access, at least because they are not available at all times, they can be distant to reach or hard to access, and they often impose limitations on the online activities that may be done and the amount of time they may be used. There are extensive examples of low-income individuals finding public Internet access wholly inadequate for important activities such as job searching and schoolwork. See Cecilia Kang, *Unemployed Detroit Residents Are Trapped by a Digital Divide*, N.Y. TIMES, May 22, 2016, at B1, available at <http://www.nytimes.com/2016/05/23/technology/unemployed-detroit-residents-are-trapped-by-a-digital-divide.html>; Marcia Pledger, *Cleveland Initiative to Help Bridge Digital Divide, Homework Gap*, PLAIN DEALER (Apr. 5, 2016), http://www.cleveland.com/business/index.ssf/2016/04/cleveland_initiative_to_help_b.html; HARRIGAN & DUGGAN, *supra* note 31, at 13; Cecilia Kang, *Bridging a Digital Divide that Leaves Schoolchildren Behind*, N.Y. TIMES, Feb. 22, 2016, at A1, available at <http://www.nytimes.com/2016/02/23/technology/fcc-internet-access-school.html>. See generally PK BMG Brief, *supra* note 1, at 12–13.

³³S. DEREK TURNER, DIGITAL DENIED: SYSTEMIC RACIAL DISCRIMINATION ON HOME-INTERNET ADOPTION 13 (Dec. 2016), available at https://www.freepress.net/sites/default/files/resources/digital_denied_free_press_report_december_2016.pdf. The study suggests that this is irrespective of income, since low-income minorities report affordability as a more important concern than low-income non-minorities; however, there was insufficient data to render this finding statistically robust. See *id.* at 97 fig.76.

³⁴*Id.* at 6.

³⁵See *id.* at 98 fig.78.

When it comes to health care, disaster relief, or education, Internet access can have life-changing consequences, as discussed above. That those of the least means will potentially be the biggest losers in the face of any exclusionary remedy diminishing domestic supply—that should suggest the severity of the public interest at stake.

Importance to Rural Communities. Mobile Internet access is also especially important for rural communities. Rural regions are less likely to have wired Internet connections due to low population densities and lack of private financial incentive to build out cables to those areas. The Federal Communications Commission finds that 39% of rural Americans lack “advanced telecommunications technology” (defined as broadband capable of speeds of 25 Mbps), compared to just 4% of Americans in urban areas.³⁶

As a result, many rural communities are dependent on cell phone service for Internet access, similar to low-income households.³⁷ And as with low-income households, exclusion of cell phones and other wireless devices will have particular impact on rural residents.

B. Cable Modems and Wi-Fi Devices

Accused Broadcom chips are found in cable modem devices that are necessary for consumers and businesses to access fixed broadband Internet services, and also Wi-Fi devices such as laptops, tablets, and other computing devices that let users access the Internet via cable modems. These devices are treated together because they are both necessary components for users to access the Internet via fixed broadband connections.³⁸

Exclusion of Broadcom-based fixed-broadband devices would have substantial impact on market availability. Broadcom dominates the Wi-Fi chip market, as noted in the previous section. And as of 2015, about 40% of the “wired IC [i.e., chip] market” is held by Broadcom.³⁹ In the market

³⁶2016 Broadband Progress Report, 31 F.C.C.R. 699, ¶ 79, at 731–32 (Jan. 28, 2016).

³⁷See HARRIGAN & DUGGAN, *supra* note 31, at 9.

³⁸Within a home, a cable modem almost always will connect to end-user devices through a Wi-Fi connection. There are other modes of connection (wired Ethernet, for example), but they are quickly becoming obsolete, and many user devices do not support them.

³⁹Press Release, *Avago Technologies Acquisition of Broadcom Creates New Semiconductor*

for DOCSIS chips (the underlying technology within cable modems), “Broadcom and Intel are the industry’s two main competitors,”⁴⁰ and “Broadcom now leads the DOCSIS chip market in shipments today.”⁴¹ Thus, any exclusionary remedy applied to this investigation could substantially limit availability of cable modems and Wi-Fi devices.

As with mobile phones, cable modems and Wi-Fi devices are necessary tools for Internet access, and exclusion of them triggers all of the public interest harms noted above. These further implicate the Commission’s public interest factors for at least two additional, unique reasons.

First, the Internet access that fixed broadband provides is of a different and more valuable quality than that offered through mobile services. Unlike mobile Internet service, fixed broadband generally comes with no data caps, is faster and more reliable, has better latency characteristics, and actually can deliver high-bandwidth multimedia content such as educational videos and voice-over-IP calls; these discrepancies have been reviewed extensively by the commenters and the Federal Communications Commission.⁴² An industry analyst explains: “Cellular broadband typically offers lower speeds and weaker reliability than its wireline counterparts.”⁴³

Powerhouse, IHS says (May 29, 2015), <https://technology.ihs.com/532191/avago-technologies-acquisition-of-broadcom-creates-new-semiconductor-powerhouse-ihs-says>.

⁴⁰Mike Dano, *From Comcast to Arris: Winners and losers in the cable industry’s move to DOCSIS 3.1 and 1 Gbps speeds*, FIERCE CABLE (Sept. 9, 2015), <http://www.fiercecable.com/special-report/from-comcast-to-arris-winners-and-losers-cable-industry-s-move-to-docsis-3-1-and-1> (quoting market analyst Jeff Heynen).

⁴¹*DOCSIS 3.0 and Gateway Devices Propel Cable Broadband CPE Market - IHS Technology*, IHS MARKIT (Nov. 16, 2012), <https://technology.ihs.com/415843/docsis-30-and-gateway-devices-propel-cable-broadband-cpe-market>.

⁴²See 2016 Broadband Progress Report, 31 F.C.C.R. 699, ¶¶ 25–27, at 710–11 (Jan. 28, 2016); Comments of the Open Technology Institute at New America at 4–20, *In re* Deployment of Advanced Telecomms. Capability to All Americans in a Reasonable & Timely Fashion, GN Docket No. 17-199 (Sept. 21, 2017), <https://www.newamerica.org/oti/wireless-future-project/legislativeregulatory-filings/2017/921-fcc-comments-section-706-and-broadband-deployment/>; Comments of Public Knowledge et al. at 20–23, *Advanced Telecomms. Capability*, GN Docket No. 17-199 (Sept. 21, 2017), <https://www.publicknowledge.org/documents/public-knowledge-2017-706-notice-of-inquiry-comments>.

⁴³Daniel Frenkel, *Comcast, Other Cable ISPs Face Limited Near-Term Cord-Cutting Risk from Wireless LTE, Analyst Says*, FIERCE CABLE (Apr. 12, 2017), <http://www.fiercecable.com/cable/comcast-other-cable-isps-face-limited-near-term-cord-cutting-risk-from-wireless-lte-analyst> (quoting Craig Moffett).

According to one study, 69% of Americans “feel that people without home broadband service are at a disadvantage when it comes to keeping up with news or information, getting health information, learning new things, accessing government services or engaging in a job search.”⁴⁴ Those whose financial means or rural residency restrict them to only cell phone Internet service still find themselves constrained to a degree from the full promise of the Internet.

Second, availability of fixed broadband devices will be especially important in disaster recovery. Victims of any of the recent natural disasters likely took their cell phones with them but not their cable modems. As a result, there is likely to be a much greater need for replacement cable modems within the United States at the current time.

It is worth noting that buildout of fixed broadband Internet service is an aspiration and project that reaches across both sides of the political aisle, with leadership in both parties committing to increasing access.⁴⁵ It would be contrary to this United States policy for the Commission to withhold the very devices that make this policy realizable.

C. Cable Set-Top Boxes

Accused Broadcom chips are also prevalent in cable set-top boxes, which are necessary for consumers to tune to television broadcasts by cable service. In 2014, Broadcom was reported to hold 49% market share in the set-top box chip market.⁴⁶ As a result, any exclusionary remedy applied to set-top boxes would significantly reduce availability in the United States.

While set-top boxes do not raise concerns about availability of Internet access (as they do not provide Internet service), exclusion of them would nevertheless have problematic effect on the

⁴⁴HORRIGAN & DUGGAN, *supra* note 31, at 11.

⁴⁵See Alan Bjerga, *Trump Pledges Rural Broadband Support in Infrastructure Package*, BLOOMBERG (June 22, 2017), <https://www.bloomberg.com/news/articles/2017-06-22/trump-pledges-rural-broadband-support-in-infrastructure-package>; Brian Fung, *Democrats Are Pushing a \$40 Billion Plan to Bring the Best Internet Access to Rural America*, WASH. POST (Sept. 28, 2017), <https://www.washingtonpost.com/news/the-switch/wp/2017/09/28/democrats-are-pushing-a-40-billion-plan-to-bring-the-best-internet-access-to-rural-america/>.

⁴⁶See Press Release, *Broadcom Extends Market Share by 4% to Nearly 49% in Set-Top Box IC Market* (May 27, 2014), <https://www.abiresearch.com/press/broadcom-extends-market-share-by-4-to-nearly-49-in/>.

public interest because the television service they intermediate is important to the act of news-gathering. A 2016 study found that television remains the dominant platform for news access for Americans, with 57% of individuals relying on television to get news.⁴⁷ Senior citizens especially rely on television: It is the platform of choice for 72% of consumers between 50 and 64, and 85% of those 65 and older.⁴⁸ Older Americans are an important demographic (not least because they are among the most active voters), and their ability to be informed is of continuing importance.

Exclusion of set-top boxes presents an especially unique public interest problem because there is no free market in these devices. Instead, consumers almost universally have exactly one choice of set-top box: the one from their cable service providers. Research by two senators in 2014 found that 99% of consumers rented their cable box from their service provider,⁴⁹ largely because each service provider requires a uniquely configured device that cannot be used on other providers' systems.⁵⁰ The Federal Communications Commission relied on the senators' study and other data to "tentatively conclude that the market for navigation devices [that is, set-top boxes] is not competitive,"⁵¹ and the White House agreed that "consumers have few alternatives."⁵²

The current monopoly in the set-top box market means that there are no alternatives or competitors to fill the gap if products are excluded. A shortage of set-top boxes means not that consumers will pay higher prices for them; it means that some consumers will not have them—and cable television access—at all.

⁴⁷ See AMY MITCHELL, *THE MODERN NEWS CONSUMER: NEWS ATTITUDES AND PRACTICES IN THE DIGITAL ERA* 5 (July 2016).

⁴⁸ See *id.* at 5 tbl.

⁴⁹ See Press Release, *Markey, Blumenthal Decry Lack of Choice, Competition in Pay-TV Video Box Marketplace* (July 30, 2015), <https://www.markey.senate.gov/news/press-releases/markey-blumenthal-decry-lack-of-choice-competition-in-pay-tv-video-box-marketplace>.

⁵⁰ See *In re Expanding Consumers' Video Navigation Choices*, 31 F.C.C.R. 1544, ¶ 10, at 1550 (Feb. 18, 2016) (Notice of Proposed Rulemaking and Memorandum Opinion and Order).

⁵¹ *Id.* ¶ 13, at 1551.

⁵² Letter from Lawrence E. Strickling, U.S. Dep't of Commerce, to Tom Wheeler, Chairman, Fed. Comm'n's Comm'n, *Expanding Consumers' Video Navigation Choices*, MB Docket No. 16-42 3 (Apr. 14, 2016), available at https://www.ntia.doc.gov/files/ntia/publications/video_navigation.pdf.

III. Conclusion

For the foregoing reasons, the Commission should limit or reverse the proposed remedies in this investigation.

The commenters thank the Commission for providing the opportunity to submit these comments. If there are any remaining questions relating to the matters presented herein, the undersigned would be happy to provide further information as necessary.

Respectfully submitted,

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