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Office of Policy Planning
Federal Trade Commission
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**COMMENTS OF ITIF ON
BROADBAND COMPETITION AND CONSUMER PROTECTION IN THE 21ST CENTURY**

The Information Technology and Innovation Foundation (ITIF) has long thought broadband competition policy crucial to a flourishing digital economy,¹ and appreciates this opportunity to comment on the Federal Trade Commission’s questions and concerns on the topic.² As ITIF president Robert D. Atkinson wrote in 2007, “there is perhaps no issue more central to the debate about broadband policy than the state of and role of competition.”³ ITIF commends the FTC for examining these issues as it explores its newly expanded jurisdiction over broadband Internet Access Service after the Restoring Internet Freedom Order.

The broadband market is not typical of most U.S. markets. As a general matter, the economics of broadband access networks are characterized by extremely high fixed costs and low marginal costs. This means that any given broadband market can theoretically have too few competitors, resulting in suboptimal output or unreasonably high prices, or it can also have too many competitors, adding duplicative, wasteful costs to the overall system. Some countries, especially those without both legacy telephony and cable systems, have tried to overcome this fundamental trade-off by having a regulated or government-owned monopoly infrastructure

¹ Founded in 2006, ITIF is an independent 501(c)(3) nonprofit, nonpartisan research and educational institute—a think tank—whose mission is to formulate, evaluate, and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress. ITIF’s goal is to provide policymakers around the world with high-quality information, analysis, and recommendations they can trust. To that end, ITIF adheres to a high standard of research integrity with an internal code of ethics grounded in analytical rigor, policy pragmatism, and independence from external direction or bias.

² Federal Trade Commission, “Hearing on Competition and Consumer Protection in the 21st Century,” Docket ID: FTC-2018-0113, <https://www.regulations.gov/docket?D=FTC-2018-0113>.

³ Robert D. Atkinson, “The Role of Competition in a National Broadband Policy,” ITIF (2007), <https://www.itif.org/files/BroadbandCompetition.pdf>.

provider and structurally separate retail competitors, however this approach comes with significant drawbacks. This retail-competition model saps the incentive to invest in infrastructure or develop new technologies. Others, particularly some advocacy organizations, have favored a strong government role to encourage and incentivize many facilities-based broadband competitors in every market, even in markets already served by a cable and teleco broadband provider. For them, more competitors is an unalloyed good because for them more competition is an unalloyed good. But not only does this represent a waste of societal resources – building redundant networks – it reduces revenues and hence capital investment for network upgrades. In this sense it is important to remember that competition is not a goal, it is a means to the kinds of ends society wants – consumer welfare, productivity and innovation.

One of the great advantages of the FTC’s *ex post* enforcement model combined with the current state of market-driven facilities-based competition is their support for innovation. Allowing companies to freely experiment with different business models and introduce new technologies gives room for a dynamic competition to drive new value throughout the system. It is important that the FTC is empowered to step in if problems become apparent, but proscriptive, extensive regulation in this space (as well as government-supported overbuilding) undermines the dynamism of broadband and adjacent markets. As discussed below, there is good reason to believe that the current facilities-based competition policy in the United States has served us quite well, and the FTC model of overseeing unfair or deceptive trade practices is well suited to see continued success.

The FTC’s 2007 *Broadband Connectivity Competition Policy* report was well-informed and demonstrated a strong understanding of the dynamic nature of the market and, for example, the balance of legitimate interests in the net neutrality debate.⁴ The 2007 report noted that “while there is disagreement over the competitiveness of the broadband Internet access industry, there is evidence that it is moving in the right direction.”⁵ The report also advised “proceeding with caution before enacting broad, *ex ante* restrictions in an unsettled, dynamic environment.”⁶ This is undoubtedly the right approach, and is the path the United States has, by and large, taken with respect to broadband—to great success.

⁴ FTC Staff Report, “Broadband Connectivity Competition Policy,” (June, 2007) (“2007 Broadband Report”).

⁵ 2007 Broadband Report at 155.

⁶ 2007 Broadband Report at 9.

Much has changed in the twelve years since that report, almost entirely for the better. The reliance on intermodal, facilities based competition (largely between cable and telephony broadband providers) that characterizes our light-touch approach to broadband competition has seen expansion of networks, faster speeds, and considerably greater output for a lower price.⁷

Broadband networks have increased speeds by remarkable amounts over the past decade. This is evident by the scaling up of the speed thresholds the FCC has examined when considering the progress in broadband deployment.⁸ It was 2008 when the FCC first started considering speeds higher than 200 kbps, noting that at that speed “consumers can enjoy the most popular applications, including web browsing and email.”⁹ Today, most users have near ubiquitous access to speeds more than two orders of magnitude faster. And that speed continues to grow. For example, consider that according to FCC estimates, “the number of Americans with access to at least 250 Mbps [down]/25 Mbps [up] broadband grew in 2017 by more than 36%.”¹⁰

Networks continue to expand geographically as well, connecting those who previously did not have a robust broadband connection. This year’s FCC Broadband Progress Report finds number of Americans lacking access to terrestrial fixed broadband meeting the FCC’s benchmark of at least 25 Mbps dropped from 26.1 million Americans at the end of 2016 to 21.3 million Americans at the end of 2017.¹¹ Most of these recently upgraded households are located in areas that are expensive to serve, usually because of low population density. It is important to note that satellite broadband—which is available to virtually every U.S. household has improved dramatically in the last decade, with speeds (25 Mbps) enabling video streaming and even reasonable two-way video communications.¹²

⁷ See Richard Bennett et al., “The Whole Picture: Where America’s Broadband Networks Really Stand,” ITIF (Feb 2013), <https://itif.org/publications/2013/02/12/whole-picture-where-america%E2%80%99s-broadband-networks-really-stand>.

⁸ See Federal Communications Commission, Archive of Released Broadband Deployment reports and Notices of Inquiry” (visited May 2019), <https://www.fcc.gov/general/archive-released-broadband-progress-notices-inquiry>.

⁹ FCC, Fifth Broadband Progress Report, GN Docket No. 07-45, (March, 2008), available at <https://www.fcc.gov/general/archive-released-broadband-progress-notices-inquiry>.

¹⁰ FCC Press Release, “2019 Broadband Deployment Report Shows America’s Digital Divide Narrowing Substantially” (May, 2019), <https://docs.fcc.gov/public/attachments/DOC-357699A1.pdf>.

¹¹ Ibid.

¹² See Broadband Now, “Satellite Internet in the United States” (visited May, 2019), <https://broadbandnow.com/Satellite>.

This isn't to say that a laissez faire approach will see all of the United States sufficiently connected. Many rural areas remain unserved by terrestrial broadband. Rural or otherwise high-cost areas represent a classic market failure that demands a different competition policy combined with reasonable, cost-effective subsidies.¹³

The successful performance contrasts with some European nations that have taken a more interventionist approach. In part because most EU nations lacked a robust cable TV footprint, European regulations favor a separation of retail and infrastructure components, and require infrastructure providers to provide wholesale access at regulated rates or unbundle components of their network. Empirical research has shown European broadband infrastructure operators invested less than half of those in the United States on a per-household basis.¹⁴ This is one reason why according to Cisco, average 2016 broadband speeds were 24.8 Mbps in Central and Eastern Europe, 30.2 Mbps in Western Europe, and 36.1 Mbps in the United States.¹⁵ Data from 2012 also showed 82% of the U.S. population was covered of high-speed broadband (25 Mbps) compared to only 54% of Europeans.¹⁶ Europe continues to under-value the power of facilities-based competition to drive investment in high-speed networks, leading some scholars to ask whether “Europe has missed the endgame [of sustainable infrastructure- based competition] of telecommunications policy.”¹⁷

The EU-U.S. comparison is especially remarkable considering the United States' sprawling suburbs and preference for detached single family homes that significantly drive up the cost of deployment compared to denser European cities. The relative success of U.S. policy isn't to say these European countries were mistaken or inherently wrong in their approach. Broadband competition policies should be pragmatic and take into account existing infrastructure and industry structure. Many European countries have a strong broadcast television industry, and never saw robust cable television deployment; while others mistakenly allowed

¹³ See Doug Brake, “A Policymaker’s Guide to Rural Broadband Infrastructure,” ITIF (2017), <http://www2.itif.org/2017-rural-broadband-infrastructure.pdf>.

¹⁴ Christopher S. Yoo, “U.S. vs. European Broadband Deployment: What Do the Data Say?” (2014), <https://www.law.upenn.edu/live/files/3352>.

¹⁵ Cisco, “The Zettabyte Era: Trends and Analysis,” (June 2017), <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/vnihyperconnectivity-wp.html>.

¹⁶ Ibid.

¹⁷ Ingo Vogelsang, “Has Europe missed the endgame of telecommunications policy?” 43 *Telecommunications Policy* 1 (Feb. 2019), <https://doi.org/10.1016/j.telpol.2018.12.006>.

incumbent telephone companies to own cable TV franchises. When a country or area is faced with infrastructure of only a single legacy copper incumbent, the tradeoffs of an open-access model may be worth it.

In the U.S., this debate often plays out around municipal broadband, whereby a local government, usually through a municipal bond, finances the infrastructure and either provides retail service itself or opens the infrastructure up for others for retail competition. Again, in limited circumstances, where an area is unserved and unlikely to be served anytime soon, the economic spillovers of providing a connection outweigh the long-run detrimental impact to innovation. However, municipal broadband is not a good tool to improve the overall broadband system. Sacrificing dynamic efficiencies like technological or business model innovation is simply not worth the switch to a model like open-access dark fiber that focuses purely on static efficiencies like price or customer service, even if it means leap-frogging to the latest access technology. The upside to massive amounts of bandwidth (either in the form of more “pipes” or much faster ones) is consistently overstated, and the cost savings for consumers is marginal, while the societal expenditure of resources is anything but. Muni broadband also tends to pick off the lowest-cost, highest-return areas of a region, leaving the less-dense suburbs or rural areas with even worse economics than what prompted the municipality to enter the business in the first place.¹⁸

Municipal providers tend to offer similar prices as private providers, which is surprising.¹⁹ We should expect municipal providers to have dramatically lower prices: Beyond the lack of profit motive, public networks have a much longer time horizon to recoup capital investment, generally don’t face the same fees to access the right-of-way, are not subject to the same local regulatory requirements as private companies, and are sometimes able to cross-subsidize off of electrical utility fees.²⁰ What is more, virtually every muni focuses first on a city’s “anchor institutions” and denser neighborhoods, and only incrementally expanding into the next lowest-cost, highest-return areas of a city. Again, this makes the economics even more difficult for private providers, who are left with the high-cost suburbs and rural areas. The fact that municipal broadband

¹⁸ See Doug Brake, “Broadband Myth Series, Part 2: Why Municipal Networks Are Not a Good Tool to Advance Broadband,” ITIF Innovation Files (Jan. 2018), <https://itif.org/publications/2018/01/25/broadband-myth-series-part-2-why-municipal-networks-are-not-good-tool>.

¹⁹ Ibid.

²⁰ A University of Pennsylvania Law School study found more than half of munis examined were cash flow negative. Christopher S. Yoo & Timothy Pfenniger, “Municipal Fiber in the United States: An Empirical Assessment of Financial Performance” (2017), <https://www.law.upenn.edu/live/files/6611-report-municipal-fiber-in-the-united-states-an>.

providers charge roughly the same prices as private providers indicates there is not a lack of competition in the market generally.

The private sector broadband industry is more competitive than ever, and it is clear our access networks are poised to change more in the next 10 years than they did in the last 10. Perhaps the most important dynamic is the increasing convergence of fixed and mobile networks. Wireless is increasingly directly competing with wired connections for home broadband. The Pew Research center has for years tracked smartphone dependency, noting “a growing share of Americans now use smartphones as their primary means of online access at home.”²¹ As of early 2018, about 20 percent of American adults rely on mobile broadband and do not have a traditional wired broadband service at home.²²

This convergence of fixed and wireless is poised to accelerate with one of the initial 5G applications being fixed wireless to the home. Some new companies, such as Starry, are focused on this technology. And some incumbent broadband providers, such as Verizon, are deploying fixed 5G networks outside their wired broadband footprint, adding another competitor in these new locations.

In addition, some new broadband providers are hoping Low Earth Orbit satellites may be the answer to a low latency, high performance connectivity with a lower cost structure. Numerous large companies, such as Facebook, Amazon, SpaceX, and OneWeb, investing heavily in space-based broadband.²³

Cable providers see the competitive threat from these new systems and are continuously innovating in turn. In addition to investing to push fiber deeper into the network and providing up to 10 Gbps symmetric capacity, the cable industry is examining leveraging its DOCSIS network for mobile backhaul, and developing low-latency and IoT solutions.²⁴ Telco firms like AT&T and Verizon, in addition to the advances in their wireless networks, continue to expand fiber and offer more robust wired connections.

²¹ Pew Research Center, “Mobile Fact Sheet” (Feb. 2018), <http://www.pewinternet.org/fact-sheet/mobile/>.

²² Ibid.

²³ See Christopher Mims, “Hate Your Internet Provider? Look to Space” Wall Street Journal, (April 2019), <https://www.wsj.com/articles/hate-your-internet-provider-look-to-space-11554897532>.

²⁴ See CableLabs, “Technologies,” (visited may 2019), <https://www.cablelabs.com/technologies>.

However, there are also important competitive dynamics not just between different infrastructure operators, but between operators and other parts of the overall Internet system. The most discussed dynamic here is between new over-the-top services that compete with incumbent systems that traditionally required dedicated facilities. “Over-the-top” Internet-based communications services and video streaming have eaten into the traditional services of incumbent providers. This is healthy competition, and leads incumbents to shift focus to general-purpose broadband offerings rather than the traditional voice and video services, ultimately making both the new entrants, incumbent networks, and end users better off through value creation.

There are more interesting and obscure ways in which dynamic competition sees complex interactions between networks and other Internet players. One good example are the advances around mobile edge or multi-access edge computing. 5G networks are designed to leverage breakthroughs in software defined networking and network functions virtualization to, among other things, provide compute and storage functionalities much closer to the end user. This allows for radically reduced latency, and could potentially see some of the functionalities of the cloud in one direction, or the end user device in the other, migrate into the “edge” of the 5G network. Some see mobile edge computing as potentially a high-value distributed cloud or as functionally replacing a local operating system for some devices. Others are more skeptical.²⁵ This is one example of dynamic competition across traditional platforms that makes broadband ill-suited to proscriptive regulation, and better overseen by a flexible *ex post* enforcer.

The FTC asked a number of questions about broadband speeds and their relation to advertised speeds. This has been an issue for some attorneys general, and was the focus of the \$174 million settlement between Charter and New York state for deficiencies in the Time Warner Cable plant and practices prior Charter’s acquisition. Most broadband services advertise speed with an important and necessary caveat: Speeds are advertised as “up to” a certain tier, and cannot be guaranteed. This is because the performance of a broadband communications link depends on the worst performing component between the end user and the destination they are attempting to reach. Sometimes the weak link of the chain is within the access network and the ISPs control, and sometimes it isn’t.

As access network speeds have improved over the years, the bottleneck affecting performance is more often elsewhere in the network. Often a home WiFi network or configuration of user hardware can be the

²⁵ See Dean Bubley, “MEC and network-edge computing is overhyped and underpowered” *disruptive Analysis* (2018), <https://disruptivewireless.blogspot.com/2018/03/mec-and-network-edge-computing-is.html>.

limitation.²⁶ These and other technical challenges with measuring broadband speeds have led researchers to conclude that “conventional approaches to speed testing no longer accurately reflect the user experience. Worse, some tests are increasingly divorced from performance metrics that users care about... and others are completely unable to accurately measure contemporary broadband speeds.”²⁷ There is significant room to improve the methodology of common widely-available speed tests.²⁸ These tests likely would not be a good tool for any Section 5 analysis. This is not to say a service provider could not be liable for misleading consumers if, for example, the equipment it provided itself was incapable of regularly hitting advertised speeds.

The FTC should be encouraged that the broadband Internet access market is increasingly competitive, with long-term dynamics continuing to drive value for American consumers and businesses.

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²⁶ See Steve Bauer, et al., “Understanding Broadband Speed Measurements,” (August, 2010). TPRC 2010. <https://ssrn.com/abstract=1988332>.

²⁷ Nick Feamster and Jason Livingood, “Internet Speed Measurement: Current Challenges and Future Recommendations” Arxiv Draft (May 2019), <https://arxiv.org/pdf/1905.02334.pdf>.

²⁸ Ibid; Bauer, Steven and Lehr, William and Mou, Merry, Improving the Measurement and Analysis of Gigabit Broadband Networks (March 31, 2016) <http://dx.doi.org/10.2139/ssrn.2757050>.