Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Safeguarding and Securing the Open Internet	)	WC Docket No. 23-320
	)	

COMMENTS OF COMCAST CORPORATION

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Comcast Corporation ("Comcast") hereby responds to the above-captioned Notice of Proposed Rulemaking ("NPRM") adopted by the Federal Communications Commission ("Commission").[1] Comcast's views on the many legal and policy issues raised by the NPRM are fully reflected in comments filed today by NCTA – The Internet & Television Association. Comcast files these comments to provide its perspective on the highly competitive broadband marketplace and the risk of consumer harms arising from Title II.

I. INTRODUCTION AND SUMMARY

The Commission is once again considering whether and how to subject broadband Internet access service ("BIAS" or "broadband") to expansive public utility regulation. One might say the Commission is considering doing the same thing over and over again and expecting different results. The last time around, advocates warned that maintaining

[1] *Safeguarding and Securing the Open Internet*, WC Docket No. 23-320, Notice of Proposed Rulemaking, FCC 23-83 (rel. Oct. 20, 2023) ("NPRM").

broadband's two-year old Title II classification was the only way to avoid untold calamities, and that anything else would "hasten" the Internet's death.[2]

If we don't save net neutrality, you'll get the Internet one word at a time.
Senate Democrats

Without Net Neutrality . . . ISPs will wreak havoc on the internet.
Free Press

The end of the Internet as we know it.
Senator Bernie Sanders

But reports of the Internet's death were greatly exaggerated.[3] Under a restored light-touch Title I framework, "the Internet continues to thrive."[4]

[2] Farhad Manjoo, *The Internet Is Dying. Repealing Net Neutrality Hastens That Death.*, N.Y. Times, Nov. 29, 2017, https://www.nytimes.com/2017/11/29/technology/internet-dying-repeal-net-neutrality.html; Timothy Karr, *6 Things Trump's FCC Chairman Doesn't Want You to Know About Net Neutrality*, Free Press (May 26, 2017), https://www.freepress.net/blog/6-things-trumps-fcc-chairman-doesnt-want-you-know-about-net-neutrality; Bernie Sanders (@SenSanders), X (Dec. 14, 2017, 2:06 PM), https://twitter.com/SenSanders/status/941383879939837953?ref_src=twsrc%5Etfw; Senate Democrats (@SenateDems), X (Feb. 27, 2018, 11:38 AM), https://twitter.com/SenateDems/status/968525820410122240; *see also* Comments of Free Press, WC Docket No. 17-108, at 67-68 (July 17, 2017), https://www.fcc.gov/ecfs/document/10411213778606/1 (repealing Title II would "drastically change the nature of the service that customers have come to expect from broadband providers" and "gravely inhibit [consumers'] access to the content of their own choosing"); Joe Concha, *CNN Headline Declares "End of the Internet as We Know It" After Net Neutrality Vote*, The Hill (Dec. 14, 2017), https://thehill.com/homenews/media/364959-cnn-headline-declares-end-of-the-internet-as-we-know-it-after-net-neutrality/; Ro Khanna, *Why We Must Save Net Neutrality*, Facebook (Nov. 21, 2017), https://www.facebook.com/RoKhannaUSA/photos/a.339679542745029/1570906509622320/?type=3 (predicting that ISPs would split the Internet into different consumer packages).

[3] *See* Brian Fung, *FCC to Reintroduce Rules Protecting Net Neutrality*, CNN.com (Sept. 26, 2023), https://www.cnn.com/2023/09/26/tech/fcc-net-neutrality-internet-providers/index.html ("In the time since [Title II classification was rescinded], ISPs have refrained from doing the kind of blocking and preferential treatment that net neutrality advocates have warned would occur."); *see also Full Committee FCC Nominations Hearing Before the S. Comm. on Com., Sci. & Transp.*, 118th Cong. at 1:56:05-1:57:59 (2023), https://www.commerce.senate.gov/2023/6/nominations-hearing-fcc (agreement by Commissioner-nominee Gomez that such claims were "hyperbolic") ("*Nominations Hearing*").

[4] *Nominations Hearing* at 1:56:05-1:57:59 (acknowledgement by Commissioner Starks that the "Internet continues to thrive" absent Title II regulation, and that predictions by net neutrality advocates "were not accurate"); *see also* Press Release, Office of Commissioner Brendan Carr, FCC, *The Title II Debate Was Settled When the Internet Didn't Break* (Oct. 18, 2023), https://docs.fcc.gov/public/attachments/DOC-397801A1.pdf (highlighting statistics demonstrating that, since 2017, "Internet [s]peeds are up," "[p]rices are down," "[c]ompetition has intensified," and "[t]he Digital Divide is narrowing").

This is no accident. Imposing utility-style regulation on any industry with substantial and growing competition stifles that competition, dampens innovation, and harms consumers. Officials and policy experts on both sides of the aisle have long agreed that competition delivers greater consumer benefits than utility regulation intended for monopolies. This is true even if the good or service is "essential." Water is a monopoly and thus regulated as a public utility; grocery stores are competitive and thus are free to make choices of what to stock and how best to serve their customers without permission. Both are essential.

To be sure, actual public utilities in America are no model for the Commission to follow. Across the country, water and electricity services are suffering from soaring prices and disastrous underinvestment. Thankfully, America chose better for the Internet.

Unfortunately, the Commission has disregarded the basics of regulatory policy in its NPRM. For decades, Congress and the Commission wisely—on a bipartisan basis—chose *not* to subject the broadband marketplace to regulation designed for telephone monopolies almost a century ago. This foresight facilitated the Internet's growth and created the dynamic marketplace for high-speed broadband services our country now enjoys. In fact, U.S. broadband networks have attracted so much private investment that they were well-prepared to withstand the once-in-a-lifetime stress test of a pandemic that resulted in extraordinary levels of network traffic. And since the regulatory overhang of Title II was lifted, the U.S. broadband marketplace has grown more competitive, more innovative, and more responsive to consumer demand.

Rather than being delivered "one word at a time,"[5] the Internet has continued to grow and evolve dynamically. Since 2017, speeds and investment are up, and prices are down.

[5] Senate Democrats, *supra* note 2.

- Access to gigabit broadband connections has increased by 80 percent;[6]
- Inflation-adjusted broadband prices have *decreased* 12 percent;[7]
- Actual broadband speeds have increased at least 300 percent;[8] and
- Annual capital investment has increased 33 percent.[9]

The Commission is not a fact-free zone. It has an obligation to make decisions based on the facts, and the facts here are clear. Instead of "wreak[ing] havoc on the internet,"[10] America's broadband sector has provided neutral and robust connectivity that has enabled the digital economy to flourish. Now more than ever, propelled by increasing competition, Internet Service Providers ("ISPs") are rapidly innovating to deliver the performance, security, and resiliency that consumers expect and demand.

The truism that broadband plays an important—or even an "essential"—role in Americans' lives is not, on its own, a rational justification to regulate a thriving and highly successful marketplace as if it were a poorly functioning monopoly. The data make clear that there is no broadband market failure to justify the sweeping government takeover proposed here. Basic economics teaches, and history confirms, that applying such regulation to well-functioning

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[6] Calculated using FCC Form 477 data as of December 2017, based on percentage of census blocks in which at least one location has access to broadband service with gigabit download speeds, and FCC Broadband Data Collection data as of June 2023, based on percentage of Broadband Serviceable Units with access to at least gigabit download speeds. *See* FCC, *Fixed Broadband Deployment Data from FCC Form 477*, https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477 (last updated Dec. 29, 2022); FCC, *FCC National Broadband Map: Data Download*, https://broadbandmap.fcc.gov/data-download/nationwide-data?version=jun2023 (last updated Nov. 28, 2023).

[7] U.S. Bureau of Lab. Stats., *Consumer Price Index Databases*, https://www.bls.gov/cpi/data.htm (last visited Nov. 14, 2023); *see also* U.S. Bureau of Lab. Stats., *Databases, Tables, & Calculators by Subject: Series CUUR0000SEEE03*, https://data.bls.gov/timeseries/CUUR0000SEEE03?output_view=data (last visited Dec. 4, 2023).

[8] Ookla, *Speedtest Global Index*, https://www.speedtest.net/global-index (last visited Nov. 14, 2023).

[9] USTelecom, *2022 Broadband Capex Report* (Sept. 2023), https://ustelecom.org/wp-content/uploads/2023/09/2022-Broadband-Capex-Report-final.pdf.

[10] Karr, *supra* note 2.

markets is not only unnecessary, but counterproductive and harmful. To ensure that consumers can continue to benefit from the fast, open, and fair Internet that they enjoy today, it is critical that the Commission retain the light-touch Title I framework that has made it possible.[11]

II. THE IMPORTANCE OF BROADBAND IS NOT A SUFFICIENT OR RATIONAL BASIS TO SUBJECT IT TO MONOPOLY-ERA UTILITY REGULATION.

A. Essential ≠ Utility.

The NPRM states the obvious: The COVID-19 pandemic put to rest any question that broadband is essential.[12] But this *in and of itself* cannot justify reclassifying broadband as a Title II utility service subject to pervasive regulation.[13] Economists, policymakers, and courts have long recognized that common carrier public utility regulation is warranted ***only*** when ***two*** conditions are met: (1) the service is essential, ***and*** (2) the service is provided by a firm with significant and durable monopoly power.[14] Based on these universal and bedrock principles,

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[11] The NPRM's invocation of issues such as national security, public safety, and privacy is a series of red herrings. As NCTA's comments explain in detail, the FCC and the broader federal government have ample tools at their disposal to address those issues regardless of broadband's classification under the Communications Act. *See* Press Release, Office of Commissioner Brendan Carr, FCC, *Fact-Checking President Biden's Myth-Filled Plan for Government Control of the Internet* (Oct. 11, 2023), https://docs.fcc.gov/public/attachments/DOC-397587A1.pdf (discussing FCC authority to address national security, law enforcement, and public safety issues without reclassifying broadband under Title II). Indeed, Title II classification would create a *gap* in the federal privacy regulation. *See* 15 U.S.C. § 45(a)(2). Broadband providers are also proactively addressing their consumers' needs for secure and resilient networks. *See infra* Part IV.C.2.

[12] NPRM ¶ 17.

[13] *Contra id.* ¶ 21 ("Given how essential BIAS is to consumers' daily lives, we believe that our proposed reclassification of BIAS as a telecommunications service is necessary to unlock tools the Commission needs to fulfill its objectives and responsibilities to safeguard this vital service."); Press Release, FCC, *FCC to Host Monthly Open Meeting Thursday Addressing Net Neutrality, Wi-Fi on School Buses, 6 GHz Band Operations, & Improved Wireless Alerts* (Oct. 17, 2023), https://docs.fcc.gov/public/attachments/DOC-397789A1.pdf (including a statement from Chairwoman Rosenworcel that "[n]ow is the time for our rules of the road for internet service providers to reflect the reality that internet access is a necessity for daily life"); Press Release, Office of the Chairwoman, FCC, *Did You Know? Ten Facts About Net Neutrality Protections* (Oct. 18, 2023), https://docs.fcc.gov/public/attachments/DOC-397806A1.pdf (stating that "[a] lot has changed since the previous FCC repealed net neutrality," including that broadband is an "[e]ssential [s]ervice").

[14] *See, e.g.*, Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 Yale J. Regul. 55, 58 (2007) (explaining that early justifications for telecommunications regulation stemmed from "dominant provider[s]" offering "an important service"); Stephen G. Breyer, Regulation and Its Reform 15-35, 156-83 (1982) (discussing "Typical Justifications for Regulation," including "The Control of Monopoly Power"); Alfred E. Kahn, The Economics of Regulation: Principles and

services like electricity, water, gas, and "POTS" telephony have historically been subject to utility regulation, because they offer vital functions ***and*** are (or were) provided on a monopoly basis. Meanwhile, many goods and services that are essential, including food and housing, have *never* been regulated as public utilities—and no one seriously contends that they should be.

As perhaps best articulated by Alfred Kahn, noted regulatory scholar and advisor to President Carter:

> [P]ublic utilities are important; but do they make a greater contribution to the national product or economic growth than the provision of food, medical care, housing or education, none of which is regulated in the same fashion? *Their importance, clearly, is not a sufficient explanation or economic justification for their subjection to regulation*.[15]

Before joining the Supreme Court, then-Judge Stephen Breyer similarly observed that "[t]he justification for [public utility] intervention arises out of an alleged inability of the marketplace to deal with particular structural problems."[16] That is why, as the D.C. Circuit has explained, common carrier price and service regulations imposed on railroads in the late nineteenth century were upheld only "on the basis of the near monopoly power [they] exercised."[17] It is now widely accepted that the "benefits of [public utility] regulation depend in important ways on the

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Institutions, Vol. I, 11 (1988) (discussing various economic rationales for the institution of regulated monopolies beyond the importance of the industry at issue, including a firm's status as a natural monopoly and circumstances in which competition does not constrain firms' behavior) ("*Economics of Regulation*"); U.S. Dep't of Just., *Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act: Chapter 2*, U.S. Dep't of Just. Archives, https://www.justice.gov/archives/atr/competition-and-monopoly-single-firm-conduct-under-section-2-sherman-act-chapter-2 (last updated Mar. 18, 2022) (explaining that courts have consistently defined monopoly power as "the ability (1) to price substantially above the competitive level and (2) *to persist in doing so for a significant period without erosion by new entry or expansion*") (emphasis added).

[15] *See Economics of Regulation*, Vol. I, at 11-12 (emphasis added); *see also New State Ice Co. v. Liebmann*, 285 U.S. 262, 277 (1932) (observing that a manufacturer of ice appealing utility licensing requirements "is a business as essentially private in its nature as the business of the grocer, the dairyman, the butcher, the baker, the shoemaker, or the tailor, each of whom performs a service which, to a greater or less extent, the community is dependent upon and is interested in having maintained; but which bears no such relation to the public as to warrant its inclusion in the category of businesses charged with a public use").

[16] Breyer, *supra* note 14, at 15.

[17] *Nat'l Ass'n of Regul. Util. Comm'rs v. FCC*, 525 F.2d 630, 640-41 (D.C. Cir. 1976).

existence of an underlying monopoly"[18]—i.e., a "firm with significant and durable market power."[19]

The Commission itself has long acknowledged that essential services should not be subject to heavy-handed utility regulations like those authorized by Title II unless the market lacks competitive constraints.[20] As the Commission has said, Title II's legislative history demonstrates that:

> Congress was well aware of the fact that the Bell System had a virtual monopoly of all interstate telephone communications, 94.3 percent of the operating revenues of all substantial telephone companies, and 89.8 percent of all local exchange messages. [Bell] also had a monopoly of all international telephone communications, whether by wire or radio.[21]

Title II was developed not only "in recognition of the monopoly position held by the providers of what Congress deemed to be an essential public service,"[22] but also "***primarily . . . to constrain***

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[18] Shelanski, *supra* note 14, at 84; *see also, e.g.*, *Section 272(f)(1) Sunset of the BOC Separate Affiliate and Related Requirements et al.*, Report and Order and Memorandum Opinion and Order, 22 FCC Rcd. 16440 ¶ 43 (2007) ("Traditionally, the Commission, in evaluating whether a carrier possesses individual market power, has considered not only current market share, but also such factors as trends in market share"); *id.* ¶ 44 (establishing a less burdensome framework for in-region, long distance services for Bell Operating Companies ("BOCs"), upon concluding that certain BOCs lack individual market power, despite their increased market shares, in part because of a trend of increasing usage substitution through wireless and VoIP services); *Business Data Services in an Internet Protocol Environment; R&O on Remand; Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. § 160(c) to Accelerate Investment in Broadband and Next-Generation Networks*, Report and Order and Memorandum Opinion and Order, 34 FCC Rcd. 5767 ¶ 35 (2019) ("[T]he costs of imposing ex ante pricing regulation far exceed the benefits of continued regulation of price cap LECs' TDM transport services. Imposing inflexible and burdensome ex ante pricing regulation on TDM transport services would harm the dynamic competitive nature of these markets, could lead to a decrease in new entrants, and would likely delay the transition from TDM- to IP-based offerings.").

[19] FTC, *Monopolization Defined*, https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/single-firm-conduct/monopolization-defined (last visited Dec. 4, 2023).

[20] *See Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, Notice of Inquiry and Proposed Rulemaking, 77 F.C.C.2d 308 ¶ 115 & nn.86-87 (1979); *see also Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 898 (2007); *United States v. Colgate & Co.*, 250 U.S. 300, 307 (1919); *Munn v. Illinois*, 94 U.S. 113, 122 (1876).

[21] *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, Further Notice of Proposed Rulemaking, 84 F.C.C.2d 445 ¶ 43 (1980) ("*Competitive Carrier FNPRM*").

[22] *Id.* ¶ 35.

the exercise of substantial market power possessed by firms providing communications services in 1934."[23]

Decades before the Internet revolutionized communications, the Commission understood that heavy-handed public utility regulation can slow innovation, introduce uncertainty, reduce incentives to invest and innovate, and ultimately harm consumers.[24] In other words, "the regulatory measures of the sort contained in Title II make sense ***only in the context of an industry lacking beneficial competitive restraints.***"[25] The Commission has similarly recognized that Congress did *not* demonstrate an intention to extend this form of regulation to communications companies *without* substantial and durable market power.[26] Most importantly, the Commission laid the cornerstone for decades of innovation in communications networks when it set forth the proposition that "***regulation of the behavior of firms that otherwise is constrained by actual or potential competition disserves the public interest***."[27] In numerous other related contexts, the Commission has credited *increasing competition* as a reason to step away from monopoly-era public utility regulation.[28] As then-Assistant Attorney General of the Antitrust Division Joel Klein observed at the dawn of the modern Internet in 1997:

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[23] *Id*. ¶ 6 (emphasis added).

[24] *See infra* Parts II.B-C.

[25] *Competitive Carrier FNPRM* ¶ 35 (emphasis added).

[26] *Id*. ¶ 53.

[27] *Id*. ¶ 147 (emphasis added).

[28] *See, e.g.*, *Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier*, Order, 11 FCC Rcd. 3271 ¶¶ 58-62 (1995) (finding that AT&T's competitors have sufficient excess capacity available to constrain AT&T's pricing behavior, and rejecting arguments that these interexchange carriers were too small to exert competitive pressure, given evidence that they had "increased their [market] share from 11.8 percent in 1991 to 17.3 percent in 1994, thus demonstrating their ability to attract and serve new customers"); *Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, Eighth Report, 18 FCC Rcd. 14783 ¶ 4 (2003) (finding effective competition in the CMRS industry, in part because "while there are several large, established carriers . . . they have no guarantee of maintaining their market share, and they are faced with consumers that would readily leave carriers that attempted to raise prices or diminish service quality"); *Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. § 160(c) to Accelerate Investment in Broadband and Next-Generation Networks*,

> We've had a regulated system of telephony in this country for over a century; it won't be deregulated in a year and even after it is deregulated, it'll take time for competition to [w]ring all the fat out of the system so that consumers truly get the best service at the lowest prices. But . . . history has taught us, time and time again, that . . . if our Nation's economy is to be as strong as it can be – indeed, as strong as it must be in an increasingly globalized market – deregulation is not only desirable, it's essential.[29]

As the Clinton Administration's Framework for Global Electronic Commerce summed it up a few months later: "Innovation, expanded services, broader participation, and lower prices will arise in a market-driven arena, not in an environment that operates as a regulated industry."[30]

B. Utility Regulation Is a Cautionary Tale.

The Commission now proposes to turn its back on these well-established principles in favor of the soundbite that broadband requires utility regulation because it is "essential infrastructure for modern life."[31] But experience in other industries calls this approach into serious question. Far from being shining success stories to be replicated here, industries like electricity and water that are currently subject to utility regulation are in terrible shape.

Memorandum Opinion and Order, 34 FCC Rcd. 6503 ¶ 25 (2019) ("We find that the existence of alternative voice service options in the marketplace will put pressure on price cap LEC rates—not only in areas where competition is most robust, but also in any areas where competition might be less robust. This is because we see no basis to conclude that price cap LECs could price discriminate based on the relative magnitude of competition present in narrow geographic areas. General market trends away from incumbent LEC wireline voice offerings, particularly TDM offerings, indicate that a number of services, provided by a variety of means, put pressure on incumbent LEC offerings."); *see also supra* note 18 (citing other similar Commission decisions).

[29] Joel I. Klein, Former Assistant Att'y Gen., Antitrust Div., U.S. Dep't of Just., Preparing for Competition in a Deregulated Telecommunications Market, Speech at the Glasser Legalworks Seminar on Competitive Policy in Communications Industries: New Antitrust Approaches 14-15 (Mar. 11, 1997), https://www.justice.gov/d9/atr/speeches/attachments/2015/06/25/1070.pdf.

[30] Framework for Global Electronic Commerce (July 1, 1997), https://clintonwhitehouse4.archives.gov/WH/New/Commerce/read.html.

[31] Jessica Rosenworcel, Chairwoman, FCC, Remarks at the National Press Club, Washington, DC (Sept. 26, 2023), https://docs.fcc.gov/public/attachments/DOC-397257A1.pdf.

Chronic underinvestment in energy infrastructure has left the nation's power grids "less flexible, less resilient, and more prone to break downs" amid increasing demand for electricity.[32] In California, regulated electric utilities suffer rolling brownouts and blackouts and are even forced to shut off power during extreme fire danger.[33] In Texas, a single winter storm in 2021 disrupted power to 4.5 million people.[34] Severe weather is not the only threat to these utilities.[35] In 2021, the SolarWinds cyberattack reached the operational technology and industrial control systems of a *quarter* of the nation's power utilities, leading one expert to advise that utilities should "assume compromise at all times."[36] Rather than being prepared for cyber threats like

[32] Milton Ezrati, *America's Electric Grid Is Weakening*, Forbes (Mar. 24, 2023), https://www.forbes.com/sites/miltonezrati/2023/03/24/americas-electric-grid-is-weakening/?sh=71fa3fc6f7e9; U.S. Energy Info. Admin., *U.S. Electricity Customers Averaged Seven Hours of Power Interruptions in 2021* (Nov. 14, 2022), https://www.eia.gov/todayinenergy/detail.php?id=54639 (explaining that "U.S. electricity customers experienced just over seven hours of electric power interruptions in 2021," compared to just over three hours in 2013); *see also* Jessica Lau & Benjamin F. Hobbs, *Electricity Transmission System Research and Development: Economic Analysis and Planning Tools* 15 (Apr. 2021), https://www.energy.gov/sites/default/files/2021-05/Economic%20Analysis%20and%20Planning%20Lau%20Hobbs2.pdf (describing how, in the electric utility context, the concept of a "death spiral of [a] utility" results from regulated monopoly utilities' inability to respond to "technology innovation and consumer desires," which itself is a result of "rate-of-return [utility] regulation and the associated business models that utilities have, as well as the fact that any changes require a regulator's approval").

[33] Kavya Beheraj et al., *California Power Outage Hours Trending Upward*, Axios San Francisco (Sept. 5, 2023), https://www.axios.com/local/san-francisco/2023/09/05/california-power-outage-hours-increase-trend-upward (discussing how California's electricity customers have been subject to increasing hours of power outages, and how such "outages stand to become more common as extreme weather events . . . wreak havoc on . . . aging power infrastructure").

[34] Press Release, N. Am. Elec. Reliability Corp., *Final Report on February 2021 Freeze Underscores Winterization Recommendations* (Nov. 16, 2021), https://www.nerc.com/news/Headlines%20DL/FERC%20NERC%20freeze%20release%20FINAL%20111621.pdf.

[35] Catherine Morehouse, *Extremists Keep Trying to Trigger Mass Blackouts — and That's Not Even The Scariest Part*, Politico (Sept. 10, 2023), https://www.politico.com/news/2023/09/10/power-grid-attacks-00114563 (describing dramatic increases in utilities' reports of physical threats and cyberattacks on major grid infrastructure since 2018).

[36] Robert Walton, *NERC Finding 25% of Utilities Exposed to SolarWinds Hack Indicates Growing ICS Vulnerabilities, Analysts Say*, Utility Dive (Apr. 15, 2021), https://www.utilitydive.com/news/nerc-finding-25-of-utilities-exposed-to-solarwinds-hack-indicates-growing/598449/.

these as a result of utility regulation, the nation's electric public utilities are extremely vulnerable to such threats in part due to chronic underinvestment.[37]

Similar issues have plagued our aging water infrastructure. The American Society of Civil Engineers recently sounded the alarm over the "staggering" annual drinking water and wastewater investment gap, which will grow to $434 billion by 2029.[38] Meanwhile, drinking water systems showed a "27% increase in water main break rates between 2012 and 2018" – equivalent to a water main break every two minutes.[39] The result is that "[d]rinking water systems currently lose at least 6 billion gallons of water, or 9,091 Olympic-size swimming pools, every day," amounting to 2.1 trillion gallons of non-revenue water loss per year.[40] In Baltimore, where some water lines and valves are over a century old, leaky pipes that are "routinely overwhelm[ed]" by weather events have led to water boil advisories for thousands of residents.[41]

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[37] *See, e.g.*, David Jones, *Critical Infrastructure Flaws Surface After Years of Underinvestment, Inaction*, Cybersecurity Dive (May 11, 2021), https://www.cybersecuritydive.com/news/critical-infrastructure-attack-ransomware/599965/.

[38] Am. Soc'y Civ. Eng'rs, *2021 Infrastructure Report Card: Drinking Water* 2, 38-39, 41 (2021), https://infrastructurereportcard.org/wp-content/uploads/2017/01/Drinking-Water-2021.pdf (explaining that U.S. water infrastructure systems are "aging and underfunded," and recommending, among other things, that utilities integrate smart water technologies to increase their resilience, and develop and fund affordability programs to support low-income and vulnerable communities).

[39] *Id.* at 35.

[40] *Id.* at 36 ("The U.S. lost an estimated $7.6 billion of treated water in 2019 due to leaks.").

[41] *See, e.g.*, Hannah Rappleye et al., *'I'm Scared to Give It to My Kids': Baltimore's Water Issues Are Symptoms of A Growing National Problem*, NBC News (Jan. 10, 2023), https://www.nbcnews.com/news/us-news/baltimore-national-water-problems-epa-rcna62762 (explaining that thousands of West Baltimore residents were under a water boil advisory following tests that showed E. coli was in the drinking water due to a "cascade of infrastructure failures"—just one example of the nation's "water infrastructure woes," as water utilities "cope . . . by deferring upgrades for as long as possible and funding upgrades on the backs of ratepayers"); Amanda Holpuch, *Fearing E. Coli, West Baltimore Boils Water in Latest Crisis*, N.Y. Times (Sept. 7, 2022), https://www.nytimes.com/2022/09/07/us/e-coli-baltimore-water.html (describing the latest water crisis in Baltimore, where "[w]ater bills [have] increased by 500 percent in the last two decades because of the rising cost of infrastructure maintenance and decreasing federal funding").

And while these and other services subject to utility regulation are struggling to maintain operations, consumers are paying *more* for such services than they pay for highly successful broadband.[42]

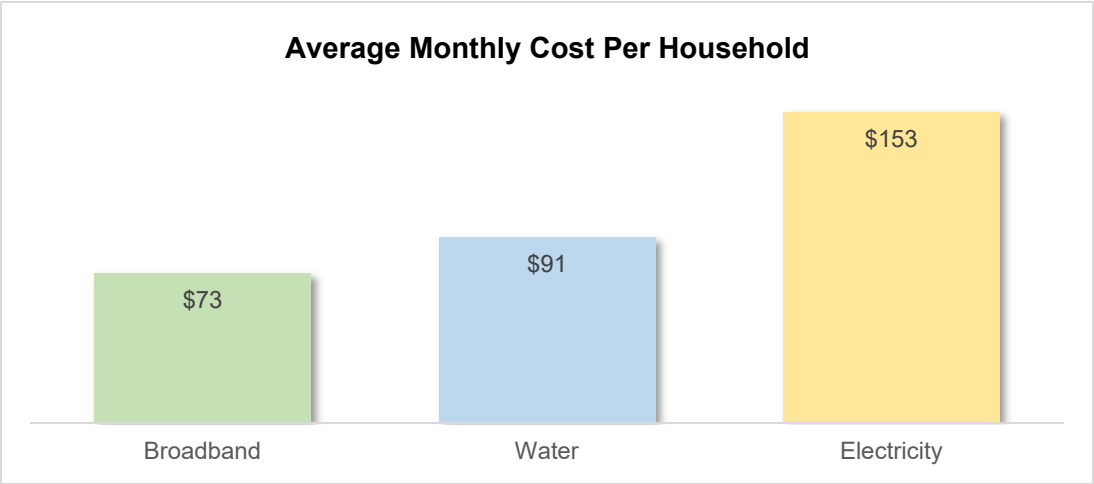

Fig. 1. *Source:* BLS, Consumer Expenditure Survey (2022).

Residential electricity rates in California, already among the "top few percentile of all residential rates in the country," have "skyrocketed" over the past decade.[43] Americans' water and sewage bills also have done the same, far outpacing inflation.[44] *Broadband prices, meanwhile, have remained virtually flat by comparison*. Given these facts, it is simply stunning that the

[42] *See* Brian A. Rankin, *Don't Drink the Water: Why the FCC Treating Broadband Like a Utility Could Make Service Worse*, Competitive Enter. Inst. (Oct. 12, 2023), https://cei.org/blog/dont-drink-the-water-why-fcc-treating-broadband-like-a-utility-could-make-service-worse/ (analyzing evidence from the water, gas, and electricity industries and concluding that "[t]he facts are clear" that "[u]tility regulation ensures neither network quality nor affordability").

[43] Shannon Osaka, *If You Live in California, Your Power Bill Will Soon Depend on Your Income*, Wash. Post (June 1, 2023), https://www.washingtonpost.com/climate-environment/2023/06/01/should-your-electricity-bills-depend-how-much-money-you-make/ (explaining that, in the last decade, non-discounted electricity rates at one of California's three electric utilities have increased 84%, while another's rates have increased 137%); *see also* NEXT 10 et al., *Designing Electricity Rates for An Equitable Energy Transition* 12 (Feb. 2021), https://www.next10.org/sites/default/files/2021-02/Next10-electricity-rates-v2.pdf.

[44] Joe Eaton, *The Surging Price of Water*, AARP (July 26, 2023), https://www.aarp.org/money/budgeting-saving/info-2023/why-your-water-bill-keeps-rising.html#:~:text=In%202022%2C%20the%20average%20monthly,of%20inflation%20over%20that%20period ("In 2022, the average monthly water and sewage bill was about $118, according to Bluefield Research, a Boston utility research firm. That's up 51 percent since 2012, more than double the rate of inflation over that period.").

Commission points over and over again to water and electricity regulation as role models for Internet regulation.

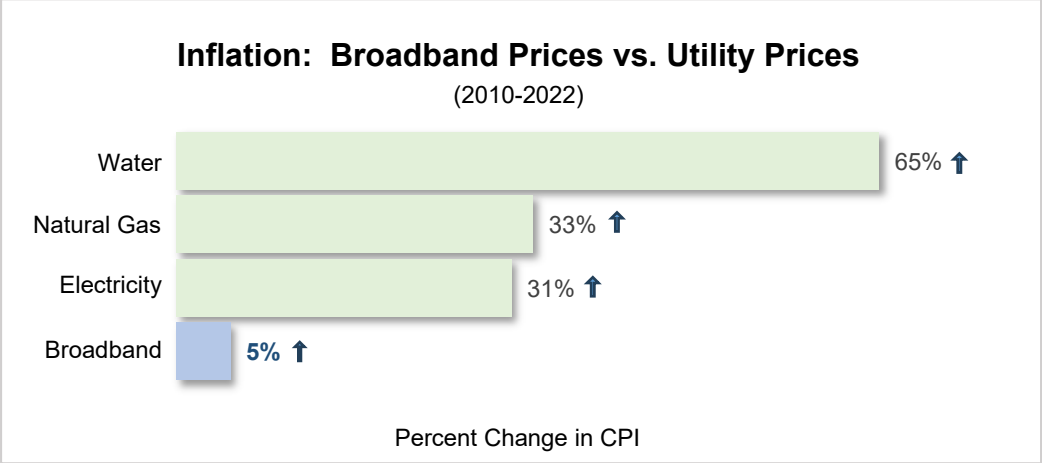

Fig. 2. *Source:* BLS, CPI (Urban Consumers Series).[45]

C. Utility Regulation Actually Harms Competition and Consumers Where Misapplied.

Misapplying utility-style regulation to an already competitive market risks harming consumer welfare by distorting competitive market outcomes,[46] a point made recently in guidance released by the Biden Administration's Office of Management and Budget.[47] The history of deregulation of various essential industries in the 1970s and 1980s illustrates that

[45] Based on a comparison of annual averages for 2010 and 2022, calculated using half-year CPI data for natural gas (Series ID CUUS0000SEHF02, Utility (piped) gas service in U.S. city average, not seasonally adjusted) and electricity (Series ID CUUS0000SEHF01, Electricity in U.S. city average, not seasonally adjusted), and monthly data for water (Series ID CUUR0000SEHG01, Water and sewerage maintenance in U.S. city average, not seasonally adjusted) and broadband (Series ID CUUR0000SEEE03, Internet services and electronic information providers in U.S. city average, not seasonally adjusted).

[46] *See* Exec. Off. of the Pres. & Council of Econ. Advisors, *Economic Report of the President 1983* 100 (Feb. 1983), https://fraser.stlouisfed.org/files/docs/publications/ERP/1983/ERP_1983.pdf?utm_source=direct_download ("Most economists agree that the regulation of price and entry in markets that would otherwise be competitive is inefficient.").

[47] Off. of Mgmt. & Budget, Exec. Off. of the President, Circular No. A-4, *Regulatory Analysis* 14, 27 (Nov. 9, 2023), https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-4.pdf ("In light of both economic theory and actual experience, it is particularly difficult to demonstrate positive net benefits for any of the following types of regulations: price controls in well-functioning competitive markets . . . [and] mandatory uniform quality standards for goods or services, if the potential problem can be adequately dealt with through voluntary standards or by disclosing information of the hazard to buyers or users . . . .").

consumers are actually harmed when such regulation is imposed despite the absence of monopoly. Utility regulation of competitive markets has been tried, and it has failed repeatedly.

For example, the Motor Carriers Act of 1935 subjected the "relatively competitive" trucking industry to "entry, rate and equipment regulations" based on the theory that these businesses were of a "quasi-public character."[48] When this regulatory overhang was finally removed in 1980, shippers were able to reduce inventories, move their products more quickly, and be more responsive to demand, leading to reduced prices, increased service quality, and other improvements that benefited consumers—without any of the negative consequences opponents of deregulation had predicted.[49] Deregulation of rail freight around the same time likewise freed an industry struggling under heavy-handed regulation, leading to lower rates and improved service across the board.[50]

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[48] *Nat'l Ass'n of Regul. Util. Comm'rs*, 525 F.2d at 641 (citing *Am. Trucking Ass'ns, Inc. v. United States*, 101 F. Supp. 710 (N.D. Ala. 1951)).

[49] *See* Jerry Ellig, *Forty Years After Surface Freight Deregulation*, Regul. Rev. (Dec. 14, 2020), https://www.theregreview.org/2020/12/14/ellig-forty-years-after-surface-freight-deregulation/ (explaining that the Motor Carrier Act resulted in shippers saving "$7.8 billion annually due to lower common carrier rates, $6 billion due to lower private carrier costs, and $1.6 billion annually due to more rapid service") (citing Clifford Winston, *Economic Deregulation: Days of Reckoning for Microeconomists*, 31 J. Econ. Lit. 1263 (1993)); *see also* Paul Teske et al., *Deregulating Freight Transportation: Delivering the Goods* 79 (Christopher C. DeMuth & Jonathan R. Macey eds., 1995) (citing studies that show trucking deregulation did *not* negatively impact the quantity, quality, or cost of service to small and/or rural communities, as opponents had predicted); *id.* at 81 ("[E]conomic deregulation of the trucking industry has not had significant effects on highway safety.") (citing Thomas L. Traynor & Patrick S. McCarthy, *Economic Regulation and Highway Safety in the Trucking Industry: A Limited Dependent Variable Analysis*, 33 Quarterly Rev. of Econ. & Fin. 141 (1993)).

[50] *See* Clifford Winston, *The Success of the Staggers Rail Act of 1980* 10-11 (AEI-Brookings Joint Ctr. for Regul. Studs., Related Publ'n 05-24, Oct. 2005), https://www.brookings.edu/articles/the-success-of-the-staggers-rail-act-of-1980/ (explaining that "[d]uring regulation, rail's slow transit time and its unreliability were a serious problem," and that "[f]ollowing deregulation, rail greatly improved its service," with one study finding that "annual benefits to shippers from lower rates and improvements in service time and reliability amounted to at least $12 billion (1999 dollars)," while "rail's overall safety record has continued to improve"); *see also* U.S. Gen. Acct. Off., GAO/RCED-90-80, *Railroad Regulation: Economic and Financial Impacts of the Staggers Rail Act of 1980* 4 (May 1990), https://www.gao.gov/assets/rced-90-80.pdf (finding that "[s]hippers have benefited from reduced railroad regulation," because "rail rates, adjusted for inflation, have declined an average of about 22 percent" since 1980 and service has improved); *id.* ("Shipper trade associations . . . said that, in general, the Staggers Rail Act had improved shippers' competitiveness and, in particular, opened new markets for some of their members.").

Deregulation of the U.S. airline industry in 1978 has similarly led to a dramatic reduction in prices and improvements in efficiency.[51] As noted by Professor Cass Sunstein, who would later head the Obama Administration's Office of Information and Regulatory Affairs, efforts to deregulate the industry were "based on the judgment that market competition [would] work in the area of airlines because it [would] lower prices and improve services as compared with Government price fixing,"[52] and "there is no question that deregulation has brought about many significant gains."[53] Since passage of the Airline Deregulation Act, average domestic round-trip real airfares have decreased 60 percent; the percentage of seats filled on each flight climbed from 55 percent to 84 percent; and, perhaps most importantly, the percentage of U.S. adults that have flown has increased from 49 percent in the early 1970s to 87 percent in 2020.[54] Looking back years later, Justice Breyer, who worked closely with Senator Edward Kennedy in crafting the Act during his time as a Senate aide, described the effort as replacing a system that "hurt the

[51] *See* Fred L. Smith, Jr. & Braden Cox, *Airline Deregulation*, The Library of Econ. & Liberty, https://www.econlib.org/library/Enc/AirlineDeregulation.html (last visited Dec. 4, 2023).

[52] *Hearings on the Nomination of Stephen G. Breyer to be an Associate Justice of the Supreme Court of the United States Before the Comm. on the Judiciary*, 103rd Cong. 577 (1994) (statement of Cass R. Sunstein) ("*Sunstein Statement on Breyer Nomination*"); *see also Regulatory Reform in Air Transportation: Hearings on S. 292 and S. 689 Before the Subcomm. on Aviation of the S. Comm. on Com., Sci., & Transp.*, 95th Cong. 97 (1977) (statement of Sen. Edward Kennedy) (describing the "emerging consensus among legislators, executive branch officials, consumer groups, airline regulators, economists, and many in the business community that rigid Federal economic regulation of the airlines tends to increase prices, foster inefficiency, and perpetuate excessive Government control, bureaucracy, and red tape").

[53] *See* Sunstein Statement on Breyer Nomination at 577.

[54] Michael Derchin, *Fly the Friendly Skies of Stephen Breyer*, Wall St. J. (Feb. 10, 2022), https://www.wsj.com/articles/fly-the-friendly-skies-of-stephen-breyer-deregulation-airlines-supreme-court-retirement-summer-11644533187; *accord* Alfred E. Kahn, *Airline Deregulation*, The Concise Encyclopedia of Econ. 1 (1993), https://econlib.org/library/Enc1/AirlineDeregulation.html (discussing lower fares and higher productivity as the "two most important consequences of deregulation" of the airline industry and specifically noting a decline in real, inflation-adjusted fares, and increases in both the number of seats on planes and the number of seats filled per flight).

consumers and the producers" with one that "allowed the market to function on its own," resulting in, among other benefits, "prices [going] way down quite quickly."[55]

* * * * *

In all of these respects, the NPRM's purported goal of putting broadband service "on par with water, power, and phone service" is not only fundamentally at odds with economics,[56] history, and the law, it also can be easily predicted to harm consumer welfare. Utility-style regulation is "least suited" for a market in which dynamic intermodal competition exists, as with broadband.[57] In the absence of credible evidence of ISPs engaging in harmful conduct requiring regulatory intervention, the NPRM recycles claims that ISPs *could* take actions undermining an open Internet—claims that have simply not been borne out by reality.[58] And contrary to the NPRM's speculation, ISPs' behavior is not being driven by regulation in a few states, but instead by market forces and consumer demand across the country.[59] Indeed, the continued growth—

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[55] Stephen Breyer, *Up For Debate: Deregulation*, Commanding Heights, PBS (2002), https://www.pbs.org/wgbh/commandingheights/shared/minitext/ufd_deregulation_full.html.

[56] Press Release, FCC, *Fact Sheet: FCC Chairwoman Rosenworcel Proposes to Restore Net Neutrality Rules* (Sept. 26, 2023), https://docs.fcc.gov/public/attachments/DOC-397235A1.pdf.

[57] *See* Alfred E. Kahn, *Telecommunications: The Transition from Regulation to Antitrust*, 5 J. on Telecomms. & High Tech. L. 159, 183 (2006) (explaining that common carrier regulation is "*in essential conflict with and obstructive of . . . developing dynamic competition* among technologically different platforms") (emphasis added).

[58] The NPRM appears to credit a 2019 throughput study as evidence "suggest[ing] that ISPs regularly throttle video content." NPRM ¶ 129 n.421 (citing Fangfan Li et al., *A Large-Scale Analysis of Deployed Traffic Differentiation Practices*, SIGCOMM '19 (2019), https://wehe.meddle.mobi/papers/wehe.pdf) ("*Throughput Study*"). But contrary to this study's highly misleading claims, it presents no actual evidence of throttling, let alone on a widespread basis. First of all, the study only included lab test data for *mobile* plans, and only those that expressly disclose that they limit video streaming to lower resolutions. *Throughput Study* at 7. And the authors admit they found no throughput "differentiation" for "the vast majority" of ISPs (including Comcast). *Id.* at 8, 12. They also concede that they could not adequately control for variations in wireless signal strength, and could not control *at all* for numerous other material factors that could have explained the throughput variations they found—including the location of the user at the time of the test, congestion in the service's transmission path, and variations in network traffic volume. *Id*. at 3. The authors also fail to even consider—let alone analyze—whether the variations reflected in their data stemmed from reasonable network management.

[59] The NPRM suggests that state laws requiring adherence to net neutrality principles in a variety of different contexts put ISPs nationwide on good behavior and averted all the harm to an open Internet that would have otherwise occurred when the Commission repealed its last Title II classification. *See, e.g.*, NPRM ¶ 129; *id*. at 135 (Statement of Chairwoman Jessica Rosenworcel). But that narrative is doomed by a fatal sequencing problem:

and, in recent years, dominance—of streaming services in the video marketplace in the *absence* of net neutrality rules indicates that consumers are satisfied with the high-quality, reliable, and neutral platform that their ISPs provide.[60]

The Commission's repeated, talismanic incantations of broadband's essentiality cannot change the fact that ISPs operate in a fundamentally different market than traditional public utilities and that material competitive restraints discipline ISPs' behavior.[61] The NPRM provides

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those state laws were enacted *after* all major ISPs had publicly committed to adhere to net neutrality principles—commitments that were *legally binding* under the FCC's transparency-based Title I regulatory framework. *See, e.g.*, *Reaffirming Our Commitment to an Open Internet*, NCTA – The Internet & Television Association (May 17, 2017), https://www.ncta.com/whats-new/reaffirming-our-commitment-an-open-internet. These commitments cannot have been driven by state laws enacted months or even years later. Rather, they were motivated by the same marketplace forces discussed herein, including the need to continue to deliver to customers the free and open Internet they expect and demand. *See* Bloomberg Editorial Bd., *No One Needs Another Net-Neutrality Fight*, Bloomberg (Oct. 17, 2023), https://www.bloomberg.com/opinion/articles/2023-10-17/attention-fcc-no-one-needs-another-net-neutrality-fight (noting that net neutrality principles are "so obvious as to hardly need enforcing," and that "ISPs generally don't want to violate these principles because doing so would have high risks and limited benefit; consumers want no part of it"); Daniel Lyons, *Why Resurrect Net Neutrality?*, Am. Enter. Inst. (Oct. 4, 2023), https://www.aei.org/technology-and-innovation/why-resurrect-net-neutrality/ ("[B]roadband providers also have incentives *not* to block content: the more content a consumer can reach, the more they're willing to pay for access."); Deborah Collier, *Negating Net Neutrality Saved the Internet*, The Hill (Sept. 16, 2023), https://thehill.com/opinion/congress-blog/4207832-negating-net-neutrality-saved-the-internet/ (observing that net neutrality "regulations are entirely unnecessary in today's vibrant and competitive broadband marketplace").

[60] *See, e.g.*, Nielsen, *Streaming Grabs A Record 38.7% of Total TV Usage in July, with Acquired Titles Outpacing New Originals* (Aug. 2023), https://www.nielsen.com/insights/2023/streaming-grabs-a-record-38-7-of-total-tv-usage-in-july-with-acquired-titles-outpacing-new-originals/ (finding that "heavy viewing levels pushed streaming's share of TV [viewing hours] to 38.7%, a new record, with Amazon Prime Video, Netflix and YouTube all hitting all-time highs"); Lucas Manfredi, *Cable, Satellite Providers Risk 'Fading Into the Background Faster' Than Expected*, TheWrap (Nov. 27, 2023), https://www.thewrap.com/cable-tv-subscribers-charts-comcast-charter-dish/ (explaining that "cable companies and other traditional TV services are bleeding subscribers as customers cut the cord and make the jump to streaming"). The NPRM's concern that vertically integrated broadband providers will discriminate against edge providers in the absence of Title II rules is unfounded in fact. NPRM ¶¶ 126, 144. If anything, ISPs have helped *facilitate* edge providers' innovation and investments, which constitute positive externalities made possible by the current framework of light-touch regulation. For its part, Comcast heavily markets third-party streaming services to its broadband customers, including by providing broadband-only customers a free Xfinity Flex streaming TV Box that enables them to "[a]ccess [their] favorite apps like Netflix, Disney+, Amazon Prime Video, and Hulu." *See What's Xfinity Flex?*, Xfinity, https://www.xfinity.com/support/articles/xfinity-flex-overview (last visited Dec. 4, 2023).

[61] *Contra* NPRM ¶ 124 (asserting that the *RIF Order*'s conclusions on ISPs' economic incentives and material competitive restraints "presumed that there were other ISPs to which consumers can switch if they were suffering open Internet harms"); *see infra* Part III.

no meaningful answer to economic theory and real-world experience demonstrating that Title II regulation of broadband is unnecessary, unjustified, and unwise.

III. THE BROADBAND MARKETPLACE IS SUBJECT TO EXTENSIVE AND STEADILY INCREASING COMPETITION AND PROMISES TO SEE EVEN MORE INTENSE FUTURE COMPETITION.

Unlike the early twentieth century telephone monopolies Title II was designed to regulate, there is no evidence that broadband providers today have the sort of monopoly power that would justify application of common-carrier regulation. As many scholars, analysts, and industry observers have recognized, the U.S. broadband marketplace is in fact characterized by "intense" competition.[62]

Fixed broadband competition has rapidly increased over the past decade, as existing providers upgrade and expand, new competitors enter, and new technologies have become available. Today, the vast majority of U.S. consumers have not just one but *multiple* choices among facilities-based fixed broadband providers—including cable companies, new fiber entrants, traditional telecom companies, and fixed wireless providers.[63] And data show that these

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[62] *See, e.g.*, Clay Sturgis, *Broadband Industry Market and Transaction Trends 2023 Update*, Moss Adams (June 30, 2023), https://www.mossadams.com/articles/2023/06/broadband-industry-trends-report-2023 (noting that "[c]ompetition is intense and growing . . . as companies seek to gain market share and expand their capabilities," and that "[f]ederal oversight of broadband through the Federal Communications Commission (FCC) and both state and federal regulation of internet service providers (ISPs) creates high barriers to entry for service providers"); John Fletcher, *2022 Broadband Forecast Shifts to Market Share Battle with Intense Competition*, S&P Global Market Intelligence (May 11, 2022), https://www.spglobal.com/marketintelligence/en/news-insights/blog/2022-broadband-forecast-shifts-to-market-share-battle-with-intense-competition ("The U.S. residential broadband outlook is increasingly dominated by market share battles amid surging investment and technological advance . . . . Cable operators believe they can continue to take market share, the telcos believe they can steal momentum with fiber, the wireless services believe 5G is their answer to residential substitution and the satellite services believe they can elevate access everywhere."); Doug Brake & Robert D. Atkinson, *A Policymaker's Guide to Broadband Competition*, Info. Tech. & Innovation Found. (Sept. 3, 2019), https://itif.org/publications/2019/09/03/policymakers-guide-broadband-competition/ ("The private-sector broadband industry is more competitive than ever, and it is clear access networks are poised to change more in the next ten years than they did in the last ten. A slew of new technologies are set to advance the capabilities of Internet Protocol networks generally.").

[63] As far back as 2010, the Commission acknowledged that "people in most parts of the country have been able to choose from two wireline, facilities-based broadband platforms for many years." FCC, *Connecting America: The National Broadband Plan* 37 (Mar. 17, 2010), https://transition.fcc.gov/national-broadband-plan/national-

various networks are constantly being upgraded such that consumers experience rapidly increasing speeds over time.

The Commission's own data also show a constant upward trajectory in the number of provider choices available to consumers regardless of the speed threshold chosen.[64]

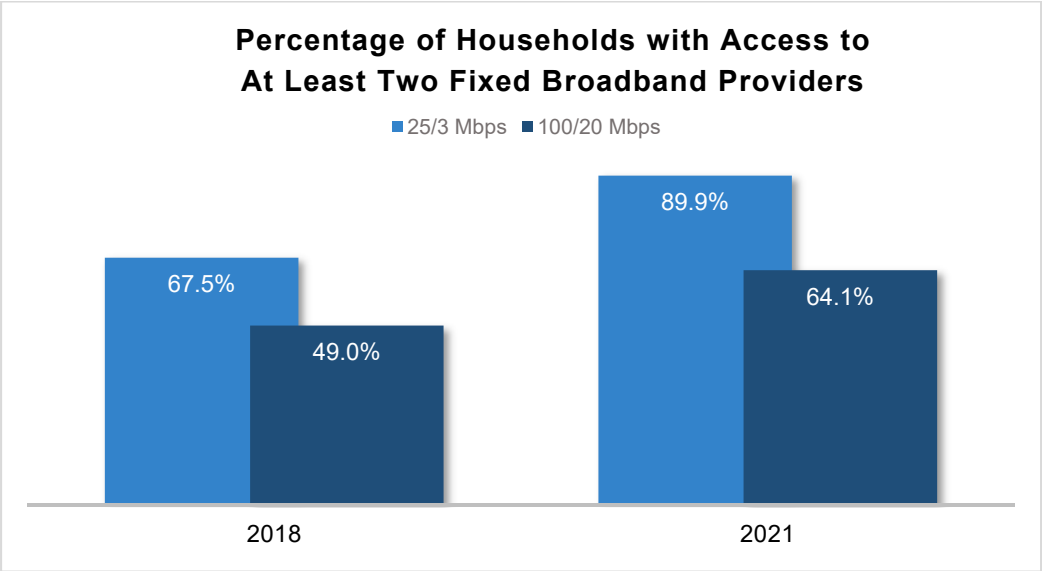

Fig. 3. *Source:* FCC Communications Marketplace Report (2022).

And as the Commission has refined its broadband data collection, this trend continues to be crystal clear. The dynamic, competitive landscape is unmistakable, with a rolling wave of more and more competition.

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broadband-plan.pdf ("*2010 National Broadband Plan*"); *see also id.* & n.2 (recognizing that "modern analyses find that markets with a small number of participants can perform competitively," and citing research that, in the broadband access market, there are "no additional competitive effects beyond a third competitor"). And the Commission's recent action to facilitate comparison shopping through its newly adopted Broadband Labels relies on the foundational premise that there is competition among multiple broadband providers today. *Empowering Broadband Consumers Through Transparency*, Report and Order and Further Notice of Proposed Rulemaking, 37 FCC Rcd. 13686 ¶ 12 (2022) ("[W]e adopt a new broadband label to help consumers comparison shop among broadband services . . . ."); *id*. ¶ 22 (adopting rules to ensure consumers can "compare plans . . . across competing providers"); *id*. ¶ 69 (adopting machine-readability requirements so that shoppers can better "compare plans offered by different providers").

[64] It is well known that the FCC's Form 477 data slightly overestimated deployment. However, criticisms that such data is over-inclusive in indicating availability of service to a census block, even if not in every location, do not undercut this trend. In fact, if the Form 477 data before 2022 overestimates the level of competition and that has now been addressed by the FCC's Broadband Data Collection, as reflected in the National Broadband Map data, then the pace of competitive increase may be even greater than shown.

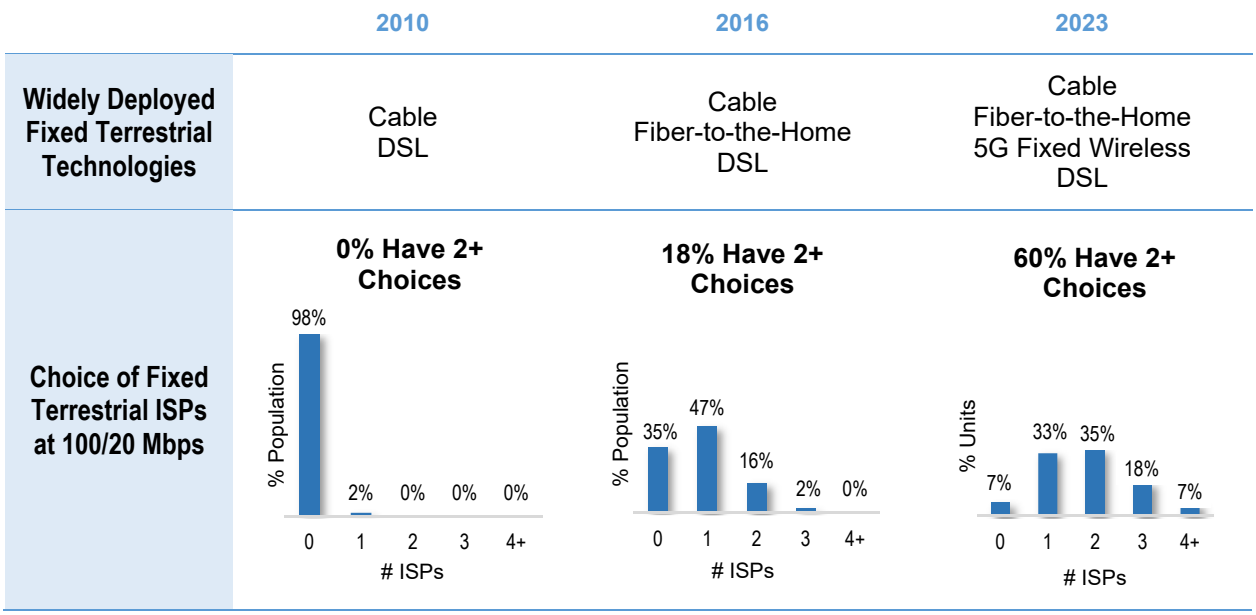

Fig. 4. *Source:* FCC Form 477 Data (2010, 2016); FCC Broadband Data Collection (2023).[65]

This upward trend has occurred due to *both* network expansions to reach new locations and upgrades to offer faster services. In addition to the upward trend in choice, average measured download speeds are now more than *double* the 100/20 Mbps threshold and continue to climb.

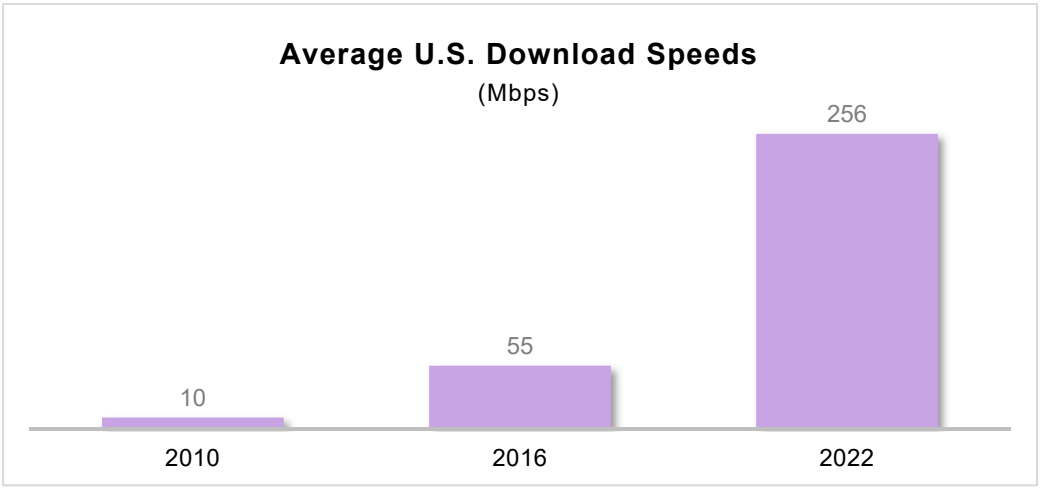

Fig. 5. *Source:* Ookla.

[65] The FCC Form 477 data used in our analysis reflect data that was current as of December 31 of the referenced years (2010 and 2016). The FCC Broadband Data Collection data used in our analysis reflect unit-level data as of June 30, 2023.

Cable ISPs face competition from fiber providers, as telephone companies continue to expand their footprints and upgrade from DSL, and as new broadband-focused fiber competitors enter the market.[66] Indeed, fiber deployment is currently proceeding at a steady clip of about 4.5 million new passings added over the twelve months prior.

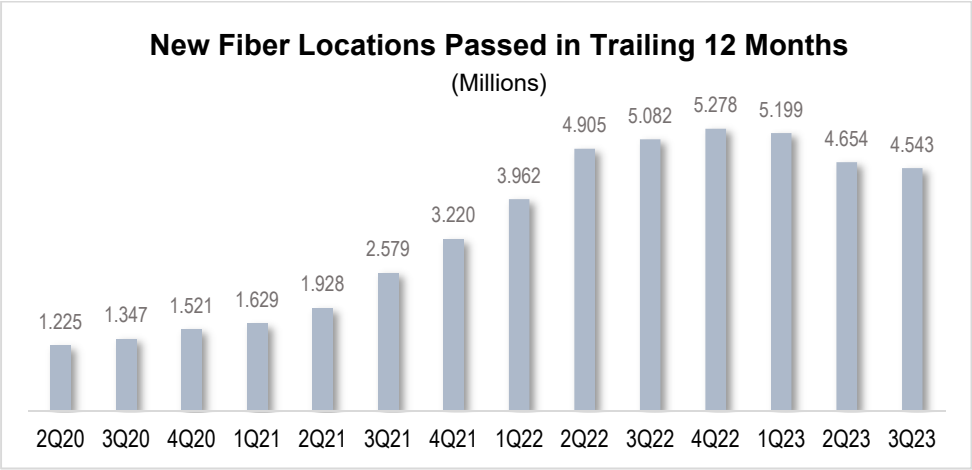

Fig. 6. *Source:* New Street Research, *Fiber to the Future: Key Takeaways* (Apr. 3, 2023); New Street Research, *Autumn for Broadband 3Q23 – the halftime report* (Oct. 28, 2023).

New Street Research projects that, under current plans, providers will have fiber deployed to 92 million locations in the coming years.[67] These fiber offerings contribute to a highly dynamic competitive marketplace and account for a rapidly increasing share of high-speed broadband customers (even using available FCC data that is now nearly two years old).

[66] *See, e.g.*, Comcast Corp., *Q3 2023 Earnings Call Transcript* 9 (Oct. 26, 2023), https://www.cmcsa.com/static-files/b1f94a25-7ca6-4867-a1de-7aac6e1bef9b ("[E]verybody has seen, it's a pretty competitive environment . . . . [W]e've also continued to see the expansion of both fiber and fixed wireless footprint . . . . [O]ur game plan is we're going to continue to invest in a better network, better products, and compete aggressively.").

[67] New Street Research, *Fiber to the Future 2023 Key Takeaways* (Apr. 3, 2023).

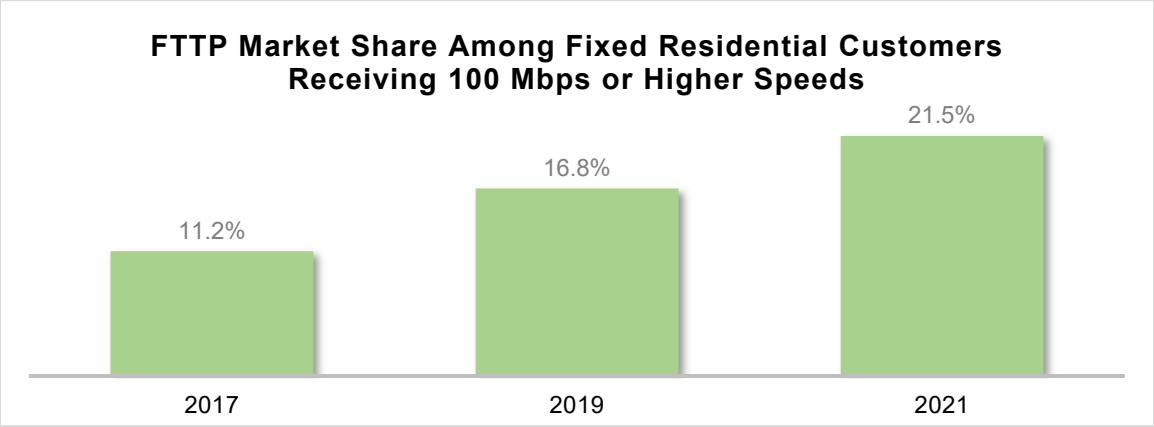

Fig. 7. *Source:* FCC Internet Access Services Reports.

Fixed wireless home broadband service and low-earth orbit ("LEO") satellite broadband have also grown tremendously over the last few years. These services are competing head-to-head with facilities-based wireline broadband providers. While the NPRM asks the extent to which broadband technologies with different technical characteristics may serve as competitive substitutes,[68] it is well accepted that even "imperfect" substitutes exert competitive pressure within a marketplace and can act as "very powerful drivers" of competitive behavior.[69]

Fixed 5G is flourishing in direct competition with existing cable and fiber offerings, transforming the competitive marketplace for broadband. Analyst research indicates T-Mobile's fixed wireless deployments are heavily focused in areas already served by either cable, fiber, or (in the vast majority of cases) both.

[68] NPRM ¶ 128.

[69] *See, e.g.*, Shelanski, *supra* note 14, at 85 (explaining that where "the fixed costs of building and maintaining a network are very high while the marginal costs of serving any customer are very low," "one network's products . . . need not be viewed as substitutes by the majority of another network's . . . customers for the latter to feel acute competitive pressure to retain customers"); *see also 2010 National Broadband Plan*, *supra* note 63, at 41 (recognizing that "wireless [may be] a viable price/performance competitor to wired solutions at far higher speeds than are possible [in 2010], further increasing consumer choice").

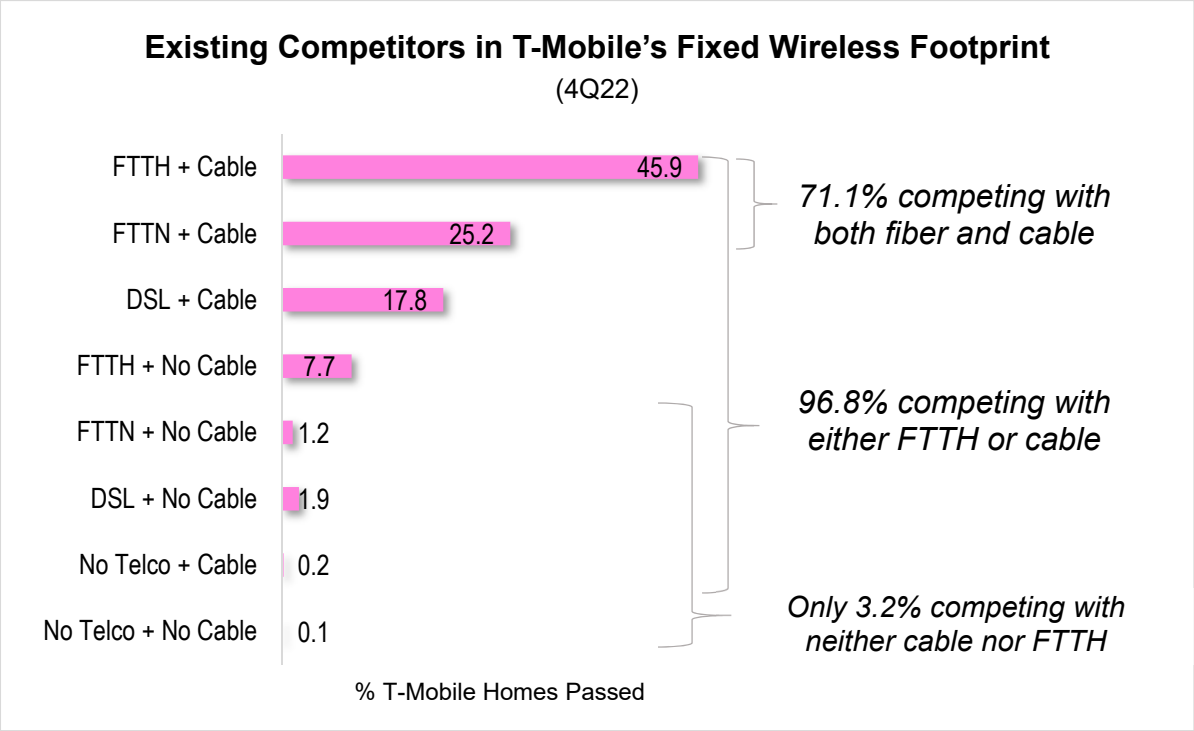

Fig. 8. *Source:* MoffettNathanson (via Opensignal).

Similarly, Verizon has touted that "[m]ore than 75% of our consumer net adds are coming from urban and suburban locations," where multimodal high-speed broadband competition is fierce.[70] The fixed wireless services provided by T-Mobile and Verizon have seen significant and rapid subscriber growth, now accounting for more than 5 percent of U.S. broadband subscribers.[71] For its part, although it may have approached fixed wireless somewhat "less aggressive[ly]" than its

[70] Verizon, *Q3 2022 Earnings Call Transcript* 5 (Oct. 21, 2022), https://www.verizon.com/about/investors/quarterly-reports/3q-2022-earnings-conference-call-webcast; *see also* T-Mobile, *The State of Fixed Wireless Access* 4 (Dec. 2022), https://www.t-mobile.com/news/_admin/uploads/2022/12/2945098_CCD_State-of-Fixed-Wireless-Access_Infographic-Report_REVW_v18_RGB-2.pdf ("Customers are leaving cable providers for fixed wireless . . . . Today, more than half of T-Mobile's 2M+ base of customers are coming from cable."); Matt Daneman, *Fixed Wireless a Broadband Sub Challenge for Regional Cable Operators*, Communications Daily (Aug. 10, 2023), https://communicationsdaily.com/article/view?search_id=714898&id=1686428 ("Multiple cable operators faced residential broadband struggles in the first half of 2023, with year-over-year residential subscriber declines in Q1 and Q2. They face different issues, but fixed wireless is a major competitive challenge for many, Leichtman Research Group's Bruce Leichtman told us . . . . The fixed wireless subs Verizon and T-Mobile added the last four quarters are coming from people who used to be part of cable's sub growth, Leichtman said.").

[71] Press Release, Leichtman Rsch. Grp., *About 840,000 Added Broadband in 2Q 2023* (Aug. 14, 2023), https://leichtmanresearch.com/about-840000-added-broadband-in-2q-2023/.

mobile rivals early on, AT&T has significantly ramped up its own fixed wireless deployments recently, rolling out its Internet Air service to compete in dozens of new markets.[72]

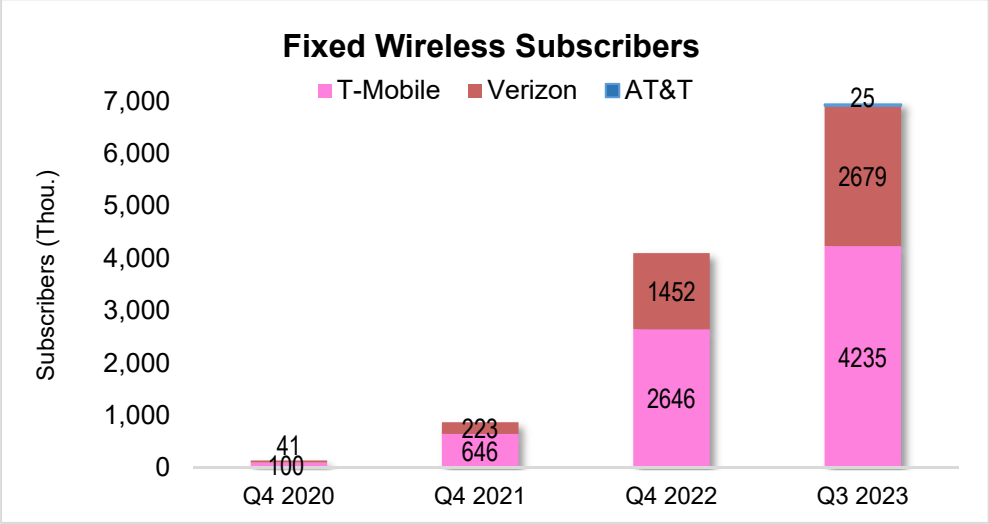

Fig. 9. *Source:* MoffettNathanson (T-Mobile, Verizon); AT&T Q3 2023 Earnings Call.

There can be no question that fixed wireless is having a "profound impact" on the marketplace.[73] In 2022, fixed wireless services accounted for *90 percent* of all U.S. broadband consumer additions,[74] and have been gaining more than 800,000 customers *each quarter*.[75] In Q3 2023 alone, fixed wireless subscribers amounted to *98.9 percent* of net additional broadband subscribers: 940,000 out of 950,000 net additions.[76] Additionally, between 2017 and 2021, the

[72] Erin Scarborough, *Say Hello to AT&T Internet Air! Plug-And-Play Home Wi-Fi Installed in Less Than 15 Minutes*, AT&T Blog (Nov. 1, 2023), https://about.att.com/blogs/2023/internet-air.html; Jeff Baumgartner, *AT&T's Fixed Wireless Play Gets 'Bigger and Louder,'* Light Reading (Aug. 22, 2023), https://www.lightreading.com/broadband/at-t-s-fixed-wireless-play-gets-bigger-and-louder.

[73] Mike Dano, *FWA Captures 90% of All New US Customers, Pleasing Around 90% of Them*, Light Reading (Mar. 6, 2023), https://www.lightreading.com/fixed-wireless-access/fwa-captures-90-of-all-new-us-customers-pleasing-around-90-of-them.

[74] *Id.*

[75] Press Release, Leichtman Rsch. Grp., *About 840,000 Added Broadband in 2Q 2023* (Aug. 14, 2023), https://leichtmanresearch.com/about-840000-added-broadband-in-2q-2023/ ("Fixed wireless services have acquired over 800,000 net adds in each of the past five quarters, accounting for about 4.45 million net adds in that period.").

[76] Press Release, Leichtman Rsch. Grp., *About 950,000 Added Broadband in 3Q 2023* (Nov. 13, 2023), https://leichtmanresearch.com/about-950000-added-broadband-in-3q-2023/.

total number of fixed wireless customers receiving 100 Mbps or faster broadband *increased by nearly 9x*. And the fixed wireless providers contend that their subscribers' usage profile is similar to that of the average wireline subscriber.[77] Although current fixed wireless plans may not offer the same higher-end speeds as cable or fiber services,[78] fixed wireless providers' investment in spectrum and technological innovations capable of supporting multi-gigabit speeds have substantially increased throughput, further increasing competition between fixed wireless and wireline services.[79] Even the Commission's nearly two-year old data (the most recent available) demonstrate this growth trajectory.

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[77] *See* Verizon, *Q3 2023 Earnings Call Edited Transcript* 11 (Oct. 24, 2023), https://www.verizon.com/about/investors/quarterly-reports/3q-2023-earnings-conference-call-webcast ("Customers are using [fixed wireless] . . . equally much as on the Fios [fiber side]. So there's no difference [i]n usage."); *see also T-Mobile US Inc.'s (TMUS) CEO Mike Sievert on Q4 2021 Results - Earnings Call Transcript*, Seeking Alpha (Feb. 2, 2022), https://seekingalpha.com/article/4483741-t-mobile-us-incs-tmus-ceo-mike-sievert-on-q4-2021-results-earnings-call-transcript ("Average users are using 300 to 400 gigs a month. We have a mid-single-digit using more than a terabyte. And people might say, 'Well, that's not the same as cable. Cable uses more than that.' But if you look at the broad distribution of cable users, their medians are right in that range.").

[78] As T-Mobile executives have put it: "It's kind of like the people at Ferrari pointing a finger at . . . Toyota saying, 'We're faster. We have the faster car.' Yes, but [a] Toyota is the world's best-selling car." T-Mobile, *Q4 2022 T-Mobile US Inc. Earnings Call Transcript* 11-12 (Feb. 1, 2023), https://s29.q4cdn.com/310188824/files/doc_financials/2022/q4/TMUS-USQ_Transcript_2022-Q4.pdf; *see also id.* (explaining that "if you look in the case of T-Mobile 5G home broadband . . . it's perfectly suited to what people want. And although it has less overall potential for capacity than a strand of fiber, which is patently obvious, it's radically simple. It's low cost. It's transparent. It's portable within tens of millions of households"); Verizon, *Q2 2023 Earnings Call Edited Transcript* 4 (July 25, 2023), https://www.verizon.com/about/investors/quarterly-reports/2q-2023-earnings-conference-call-webcast ("[I]t's clear, fixed wireless access is here to stay as a proven competitive broadband product.").

[79] *See* Sowmyanarayan Sampath, Chief Exec. Officer, Verizon Remarks at SVB MoffettNathanson Inaugural TMT Conference (May 16, 2023), https://www.verizon.com/about/sites/default/files/2023-05/MN_Conference_Transcript_051623.pdf (explaining that "on the current C-band that [it] ha[s], [Verizon] can read speeds of 900 to 1 gig speed," and that "[w]hen [Verizon] get[s] the new band, [it] can go up to 2.4 gigs in terms of speed"); Joan Engebretson, *Faster Fixed Wireless Comes a Step Closer with Latest FCC Move in 6 GHz Band*, Telecompetitor (Aug. 28, 2023), https://www.telecompetitor.com/faster-fixed-wireless-comes-a-step-closer-with-latest-fcc-move-in-6-ghz-band/ (explaining that the "latest FCC action [announcing testing for the automated frequency coordination systems that will manage access to 6 GHz band spectrum] is good news for fixed wireless equipment makers and the wireless [ISPs] who use that equipment and who are hoping to support speeds as high as 1 Gbps using the spectrum").

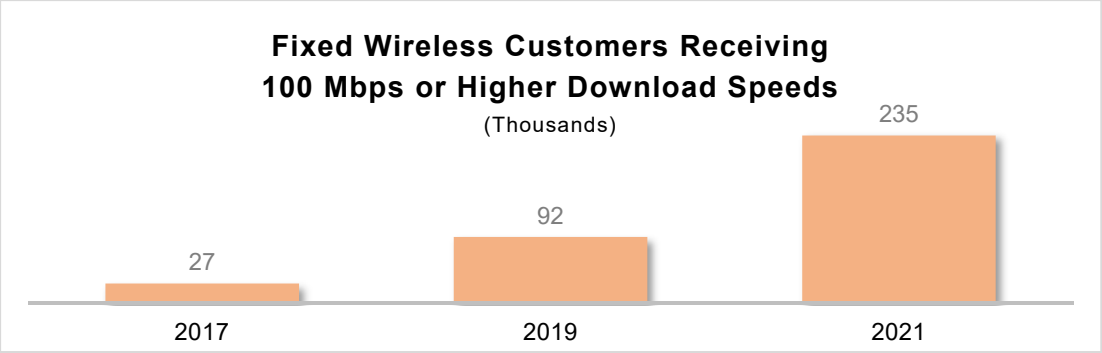

Fig. 10. *Source:* FCC Internet Access Services Reports.

Notably, competition between wireline and wireless services has gone both ways. Indeed, before the nation's large mobile carriers had meaningfully entered the residential fixed wireless marketplace (what T-Mobile's then-CEO John Legere called an "outside . . . in" strategy), the nation's leading cable ISPs were already making significant inroads in the mobile wireless marketplace (an "inside-out" strategy).[80] While mobile carriers were initially dismissive of the cable industry's nascent mobile offerings,[81] these new competitors have since gained a significant foothold: the U.S. cable industry accounted for nearly 75 percent of total net additions in the mobile market in one recent quarter.[82] It is now accepted that competition from services such as Comcast's Xfinity Mobile is "put[ting] enormous pressure on the incumbents," forcing them to compete more aggressively than ever before.[83]

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[80] *See T-Mobile US's (TMUS) CEO John Legere on Q4 2017 Results - Earnings Call Transcript*, Seeking Alpha 18 (Feb. 9, 2018), https://seekingalpha.com/article/4145138-t-mobile-uss-tmus-ceo-john-legere-on-q4-2017-results-earnings-call-transcript ("Color us not afraid of their cable inside-out strategy . . . . I'd rather be outside looking in.").

[81] *See, e.g.*, *id.* (John Legere referring to cable mobile wireless offerings as "very irrelevant" and "irrelevant-squared").

[82] Jeff Baumgartner, *US Cable Captured 75% of Mobile Net Adds in Q1 – Study*, Light Reading (May 30, 2023), https://www.lightreading.com/cable-technology/us-cable-captured-75-of-mobile-net-adds-in-q1-study ("*Q1 2023 Mobile Competition Report*"); *see also* Mike Dano, *Q3 Wireless Takeaways: Phone Sales Low, Customer Growth High*, Light Reading (Oct. 30, 2023), https://www.lightreading.com/finance/q3-wireless-takeaways-phone-sales-low-customer-growth-high ("Cable is still eating away at industry subscriber share.") (quoting Wells Fargo analysts).

[83] *Q1 2023 Mobile Competition Report*; *see also* Jeff Baumgartner, *Cable's Record Wireless Gains Create More Trouble for Mobile's Big Three*, Light Reading (Feb. 6, 2023), https://www.lightreading.com/cable-

Meanwhile, billions of dollars in investment and rapid innovation in satellite technologies —most notably in LEO constellations—have further broadened the competitive options available to U.S. consumers. Starlink has launched nearly 4,900 LEO satellites as of October 2023,[84] and it markets that its satellite broadband service is available "no matter how remote" the location, at speeds "suitable for . . . typical household internet use."[85] In fact, Starlink reports that a "majority" of users experience download speeds over 100 Mbps.[86] And Amazon-backed Project Kuiper is in the process of deploying a constellation of 3,236 LEO satellites,[87] with customer terminals that are expected to deliver speeds of up to 400 Mbps for a "standard" model or up to 1 Gbps for the "pro" model.[88] As these examples demonstrate, satellite broadband service is fast

technology/cable-s-record-wireless-gains-create-more-trouble-for-mobile-s-big-three (summarizing a report from MoffettNathanson finding that "US cable's big wireless gains in 2023 and expected continued momentum this year . . . will make it difficult for mobile's 'Big Three'—AT&T, T-Mobile and Verizon—to beat and raise their subscriber targets"); Comcast Corp., *Q1 2023 Earnings Call Edited Transcript* 6, 9 (Apr. 27, 2023), https://www.cmcsa.com/static-files/0f815942-ba2f-4b63-b739-9e4a1fa46827 (explaining that "[t]here is clearly demand for a converged offering that delivers reliable and fast speeds both in and out of the home," and that "[mobile] wireless continues to be a key part of [Comcast's] overall strategy"); Monica Alleven, *Charter Pitches $49.99 'Spectrum One' Mobile/Internet Bundle*, Fierce Wireless (Oct. 10, 2022), https://www.fiercewireless.com/wireless/charter-pitches-4999-spectrum-one-mobileinternet-bundle (characterizing Charter's "heavy ad blitz" for its broadband and mobile service bundle as "another volley in [Charter's] competition with mobile operators as cable operators increasingly bite into the mobile market and mobile carriers like T-Mobile and Verizon attempt to woo cable subscribers with fixed wireless access (FWA) home internet offers").

[84] Mike Wall, *SpaceX Launches Starlink Satellites on 75th Orbital Mission of 2023*, Space.com (Oct. 21, 2023), https://www.space.com/spacex-starlink-launch-group-7-5.

[85] *See* Starlink, *Starlink for Homes*, https://www.starlink.com/residential (last visited Dec. 4, 2023); Starlink, *Starlink Specifications*, https://www.starlink.com/legal/documents/DOC-1400-28829-70 (last visited Dec. 4, 2023).

[86] *Starlink Specifications*, *supra* note 85; *see also* Brian Westover, *Starlink Speed: How Much Faster is Elon's Satellite Internet in 2023 v. 2022?*, PCMag (May 17, 2023), https://www.pcmag.com/news/starlink-speed-tests-2023-vs-2022 (finding that two-thirds of Starlink's download speeds clock-in above 100 Mbps); Josh Fomon, *Starlink Hits 100+ Mbps Download Speed in 15 Countries During Q4 2021*, Ookla (Mar. 16, 2022), https://www.ookla.com/articles/starlink-hughesnet-viasat-performance-q4-2021 (finding that, during Q4 2021, Starlink's fastest median download speed for a U.S. county was 191.08 Mbps, while the slowest was 64.95 Mbps).

[87] Amazon, *Project Kuiper*, https://www.aboutamazon.com/what-we-do/devices-services/project-kuiper (last visited Dec. 4, 2023).

[88] *See* Michael Sheetz, *Amazon Shows Off New Satellite Internet Antennas as It Takes on SpaceX's Starlink*, CNBC (Mar. 14, 2023), https://www.cnbc.com/2023/03/14/amazon-first-look-project-kuiper-satellite-internet-antennas.html.

becoming a competitor not only in terms of availability, but also, as a Project Kuiper executive put it, in terms of "quality, reliability, and value."[89]

The intense competition in the broadband marketplace is underscored by the very high advertising and promotional spending by ISPs, who engage in a wide array of promotions, discount offers, and advertisements to compete against one another. In 2022, *five* different ISPs landed in the top 20 U.S. companies in total advertising, marketing, and promotional spending.[90] Compare this to public utilities that never run advertisements competing for business, and it becomes clear that application of Title II to this marketplace would be inapposite.

Even more competition is on the horizon. By the end of the decade, as cable, fiber, fixed wireless, and LEOs compete for market share, most Americans will be able to choose from among several fixed broadband providers, and even the hardest to serve households will be able to choose between at least two providers. This is the future consumers can expect if the Commission does not impose a regulatory framework that stifles innovation and investment in network deployment and upgrades.[91]

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[89] *See* Emma Roth, *Amazon Reveals Its Squared-Off Project Kuiper Satellite Internet Dishes*, The Verge (Mar. 14, 2023), https://www.theverge.com/2023/3/14/23639450/amazon-project-kuiper-satellite-dish-internet.

[90] *See* Bradley Johnson et al., *The 25 Biggest US Advertisers, Ranked—Leading National Advertisers 2023*, Ad Age (June 26, 2023), https://adage.com/article/datacenter/25-biggest-us-advertisers-include-amazon-comcast-and-pg/2497386 (Comcast (2nd); Verizon (8th); Charter (10th); AT&T (18th); T-Mobile (20th)); *see also* Jeff Moore, *2022: The Year of Telecom Convergence — Moore*, Fierce Wireless (Dec. 21, 2022), https://www.fiercewireless.com/wireless/2022-year-telecom-convergence-moore (explaining that cable providers and fixed wireless providers alike have engaged in aggressive "publicity efforts and negative advertising . . . [which] shows how real cable/wireless competition has become").

[91] *See, e.g.*, Scott Wallsten, *Reclassifying Broadband Under Title II Will Not Increase Competition*, Tech. Pol'y Inst. (Oct. 8, 2023), https://techpolicyinstitute.org/publications/broadband/net-neutrality/reclassifying-broadband-under-title-ii-will-not-increase-competition/ (analyzing relevant data and finding "clear trends over time showing increased competition plus the arrival of new-facilities competition blanketing the country," and noting that "most research has found that Title II-style regulation has been bad for investment and innovation not just in telecommunications, but in other areas like railroads and gas, as well").

IV. THE COMPETITIVE MARKETPLACE IS DRIVING ISP BEHAVIOR, INCLUDING REASONABLE PRICING, UNPRECEDENTED INVESTMENT, INNOVATION, AND OTHER CONSUMER BENEFITS.

Consumer choice for broadband service undermines the reasoning for Title II reclassification of broadband. Competition has also delivered tremendous consumer welfare, including (1) a long-term trend of reasonable pricing well below overall inflation trends; (2) unprecedented levels of investment, the vast majority of which is coming from private sources; and (3) higher speeds and more service quality enhancements than ever before, including in cybersecurity and other areas. This underscores what economic theory and history have long taught, and what was confirmed when the Internet did not "end as we know it" after the repeal of Title II regulation in 2018: competition works better than regulation. The past six years have proven that utility regulation and conduct rules are simply not necessary to prevent broadband providers from taking actions that would undermine their customers' access to a fair and open Internet.[92] And there is very good reason to believe utility regulation would have thwarted these gains.

A. ISPs Are Competing to Win Customers Through Reasonable Pricing and Robust Affordability Programs.

Competition has not only kept broadband prices moderate, but also continues to drive ISPs to win customers at all income levels. It is no surprise that ISPs offer a range of affordable plans to low-income Americans. Contrary to the NPRM's suggestion,[93] an analysis of available data shows that consumers have benefitted from robust pricing competition and affordable service options.

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[92] *See, e.g.*, Collier, *supra* note 59 (noting that, in the wake of the *Restoring Internet Freedom* order, "[b]roadband deployment increased," and "new technologies providing faster and more reliable speeds were developed that enhanced network[] speeds and reliability").

[93] NPRM ¶ 142.

Inflation has been commanding headlines and is a significant source of concern for American consumers. But broadband has been a notable bright spot. Data from the U.S. Bureau of Labor Statistics' ("BLS") Consumer Price Index ("CPI") show that, between 2010 and 2022, inflation-adjusted broadband prices *declined* 22 percent.[94]

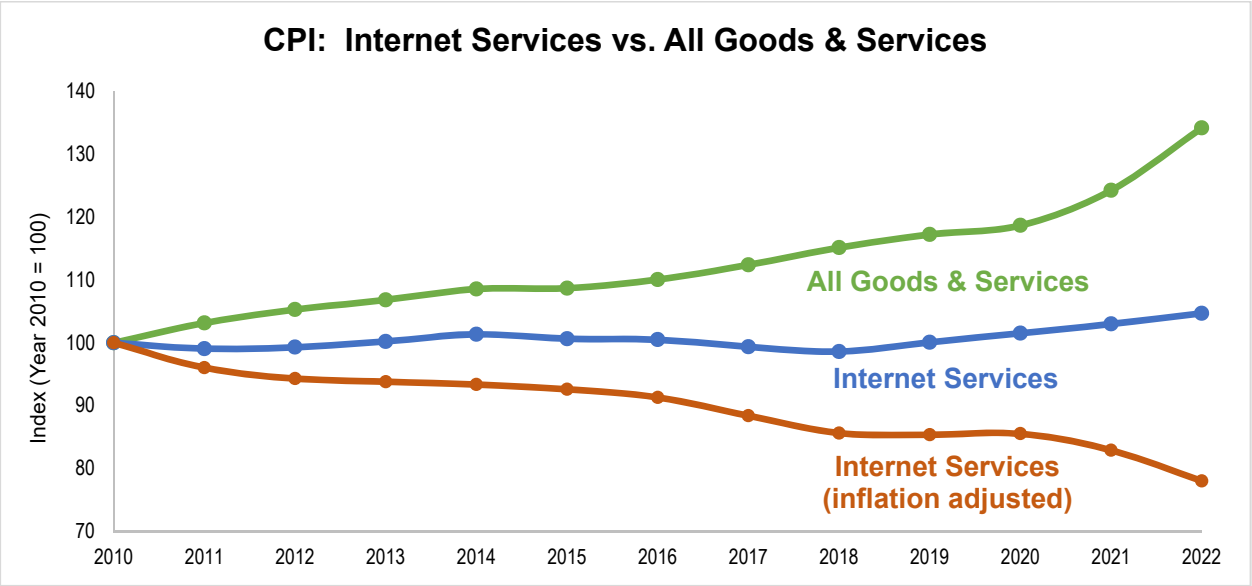

Fig. 11. *Source:* BLS, CPI (Series IDs CUUR0000SA0, CUUR0000SEEE03).

The Commission's own data similarly show a long-run trend of *decreases* in weighted broadband pricing. An analysis of the Commission's Urban Rate Survey benchmark data indicates that weighted monthly broadband prices have gone down significantly across multiple speed tiers in recent years.[95]

[94] *See also supra* Fig. 2 (demonstrating that prices for services subject to utility regulation (e.g., water, electricity, natural gas) have increased significantly over the same period).

[95] Scott Wallsten, *Broadband Prices Mostly Stable Last Year*, Tech. Pol'y Inst. (Dec. 22, 2022), https://techpolicyinstitute.org/publications/broadband/broadband-prices-mostly-stable-last-year/.

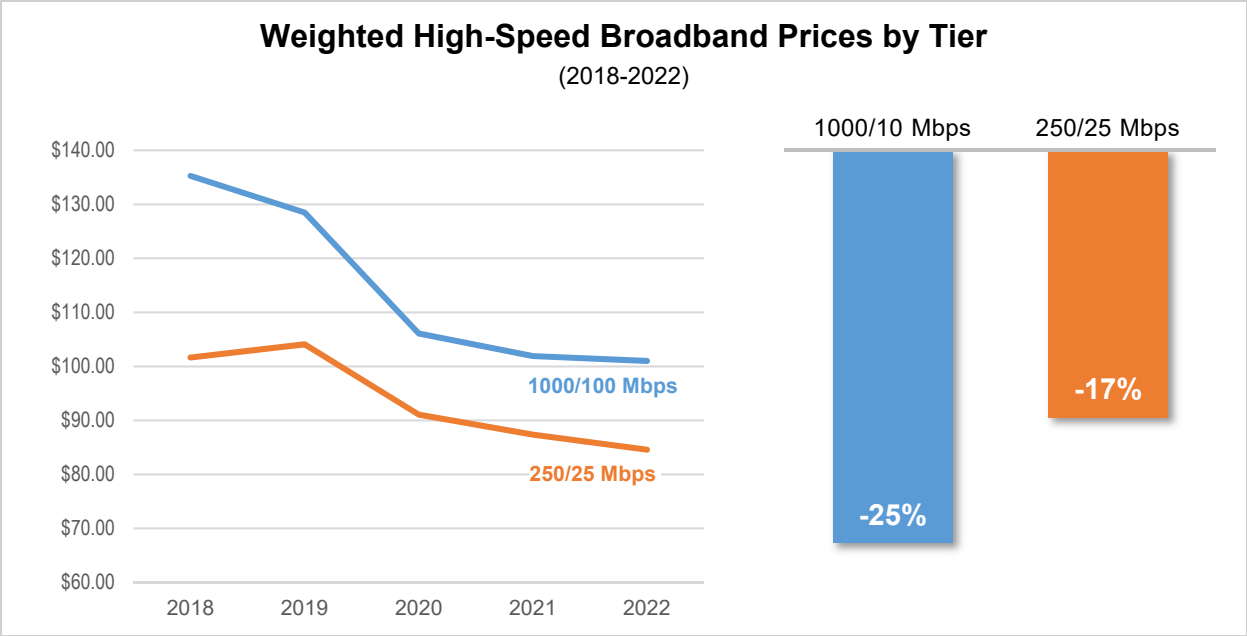

Fig. 12. *Source:* FCC Urban Rate Survey; BLS, CPI; Technology Policy Institute.

These data from recent years are emblematic of a much longer-term trend. Quality-adjusted price per Mbps of cable broadband service *declined 98%* from 2000 to 2020—from $28.13/Mbps to just $0.64/Mbps—for the most widely purchased service tiers.[96]

Even amid the largest wave of inflation in decades, from Spring 2021 to Spring 2023, broadband prices held steady. Month after month, price increases (if any) fell well below the overall rate of inflation and were dwarfed by skyrocketing prices for household staples like natural gas, gasoline, and food.[97] This was most evident during the periods of sharpest inflation.

[96] *As Internet Speeds Surge, Cable Broadband Delivers Increasing Consumer Value*, NCTA – The Internet & Television Association (Mar. 3, 2021), https://www.ncta.com/whats-new/as-internet-speeds-surge-cable-broadband-delivers-increasing-consumer-value.

[97] *See Internet Is Affordable for All: How Much Does Internet Cost in the United States?*, NCTA – The Internet & Television Association, https://www.ncta.com/broadband-affordability (last visited Dec. 4, 2023); Scott Wallsten, *What's Cheaper Than Free?*, Tech. Pol'y Inst. (Feb. 22, 2022), https://techpolicyinstitute.org/publications/broadband/digital-divide/whats-cheaper-than-free/.

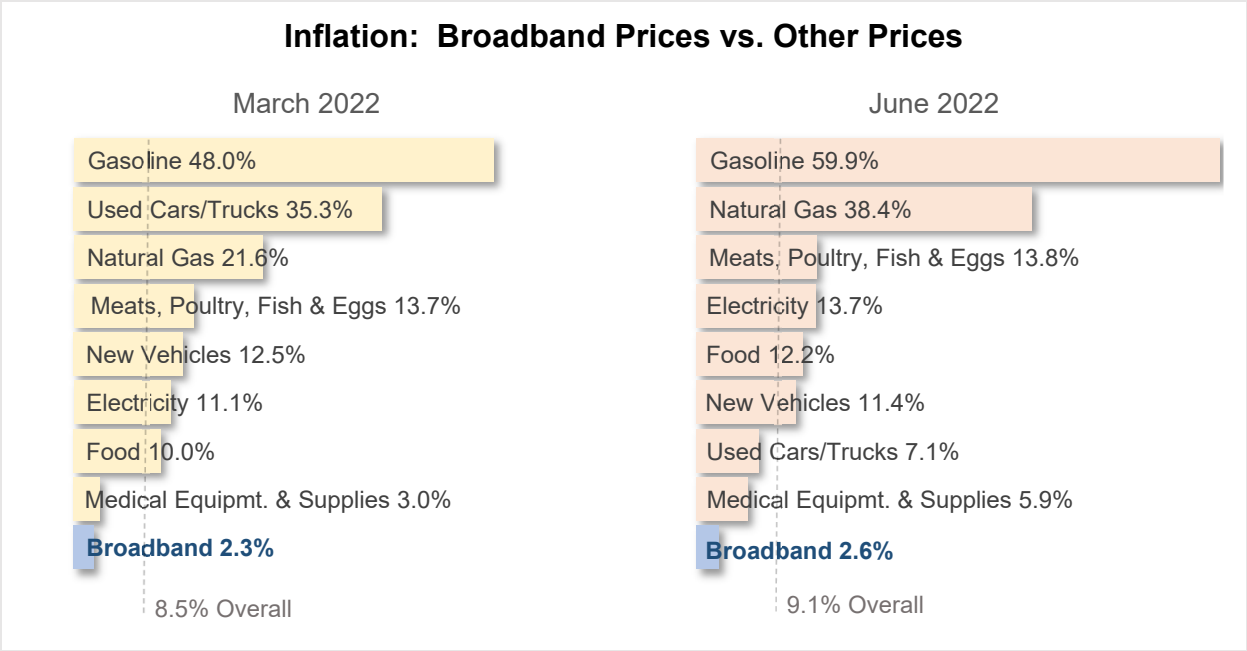

Fig. 13. *Source:* BLS, CPI (March 2022, June 2022).

Under monopoly theory, these surges in inflation would have been prime opportunities for ISPs to engage in price gouging. The fact that this did not occur is further evidence of a marketplace subject to robust competitive constraints.

In addition, private-sector ISPs serve as critical partners to public programs targeting affordability for low-income households,[98] and supplement such efforts through programs of their own, such as Comcast's Internet Essentials.[99] Alongside broader commitments to digital

[98] *See, e.g.*, NPRM ¶ 51 (describing the Commission and federal government's "significant investments" in broadband affordability); The White House, *Get Internet*, https://www.whitehouse.gov/getinternet/ (last visited Dec. 4, 2023) (explaining that there are over 1,300 providers that accept the Affordability Connectivity Program benefit); Phil Britt, *Comcast Expands Participation in the ACP, Offers Free 100 Mbps Service*, Telecompetitor (Mar. 1, 2022), https://www.telecompetitor.com/comcast-expands-participation-in-the-acp-offers-free-100-mbps-service/ (quoting Comcast Executive Vice President Broderick Johnson's statement that "[t]he Affordable Connectivity Program is a once in a lifetime opportunity that Comcast is proud to support").

[99] In 2011, Comcast launched the Xfinity "Internet Essentials" ("IE") program, which provides broadband service to eligible low-income households at 50 Mbps downstream, including a free modem, access to millions of Xfinity hotspots, and unlimited data. *See Internet Essentials*, Comcast Corp., https://corporate.comcast.com/impact/digital-equity/internet-essentials (last visited Dec. 4, 2023). Since its inception, IE's monthly price has remained at $9.95 per month, even as speeds have increased seven times, including more than doubling during the early days of the pandemic. *Id.* Comcast also provides discounted devices and free digital skills training through IE, which helps address other primary drivers of the broadband adoption and digital skills gaps. *Id.* While Comcast's IE is the

equity—such as Project UP, Comcast's $1 billion, comprehensive commitment to create and advance digital equity[100]—these ISP-led initiatives underscore that broadband providers are already making access to broadband a possibility for *all* Americans.[101] Against this backdrop, there is simply no basis to conclude that Title II reclassification is needed to promote these objectives.

B. Competition Is Driving Unprecedented Levels of Private Sector Investment.

Private-sector capital investment in broadband networks has been steadily increasing for over a decade, and this momentum has grown in recent years to unprecedented levels[102]—after recovering from a downtick during the brief period in which broadband was classified as a Title II service.[103]

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largest and most successful industry-based broadband adoption initiative, Comcast is not alone in proactively promoting broadband affordability. Other major broadband providers, including Charter, Cox, AT&T, Verizon, and Frontier, offer similar low-income broadband programs, joining with IE to successfully connect tens of millions of low-income consumers to the Internet.

[100] *See* Project UP, Comcast, https://corporate.comcast.com/impact/project-up (last visited Dec. 4, 2023).

[101] Under broadband's current Title I classification, the Commission also has administered billions of dollars in annual support from the federal Universal Service Fund to qualifying households through its Lifeline program, which offers a $9.25 monthly discount for broadband or voice services. *Lifeline Support for Affordable Communications*, FCC, https://www.fcc.gov/lifeline-consumers (last updated Sept. 19, 2023).

[102] Michael Mandel & Jordan Shapiro, *Investment Heroes 2023*, Progressive Pol'y Inst. 7 (Oct. 2023), https://www.progressivepolicy.org/wp-content/uploads/2023/10/PPI-Investment-Heroes-2023.pdf (finding that capital spending in the U.S. broadband/wireless sector increased 31% from 2019 to 2022, an "investment surge [that] is holding down prices" and resulting in average download speeds faster than Taiwan, Japan, South Korea, and any European country).

[103] *See* NPRM ¶ 57 (seeking comment on "any evidence that ISP investment is closely tied to the regulatory classification of BIAS"). As a general matter, researchers have found that Europe's "consistently . . . more aggressive regulatory stance" has *not* "paid off in the form of the higher investment." *Investment Heroes 2023*, *supra* note 102, at 4 (finding that non-construction investment in the United States rose by 20% from 2019 to 2022, compared to only 12% in the European Union).

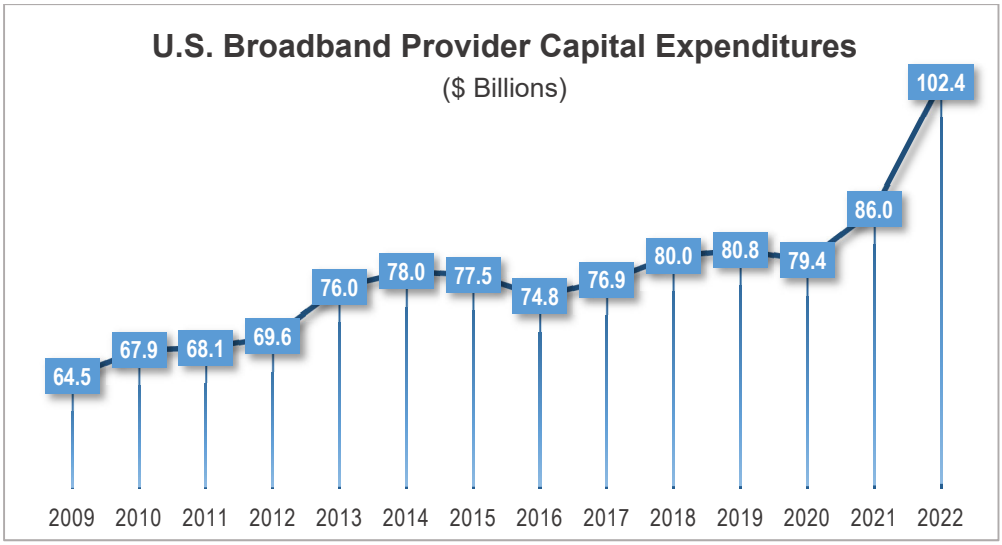

Fig. 14. *Source:* USTelecom, *2022 Broadband Capex Report.*

In 2022 *alone*, capital expenditures by Comcast, Charter, AT&T, T-Mobile, and Verizon totaled more than $70 billion.[104] That *one-year* total from just five companies is approximately the same amount as the federal government has allocated *through the year 2028* for its historic investment in deploying broadband infrastructure.[105]

Thanks to this robust and sustained private-sector investment, terrestrial fixed broadband is now deployed to over 94 percent of broadband serviceable locations,[106] with gigabit

[104] *See* Masha Abarinova, *Here's Where Major U.S. Wireline Operators Stand on Capex*, Fierce Telecom (Feb. 8, 2023), https://www.fiercetelecom.com/telecom/heres-where-major-us-wireline-operators-stand-capex-20222023; Billy Duberstein, *Here's Why T-Mobile Could Repeat Its 20% Gain From Last Year (or Do Better)*, The Motley Fool (Feb. 2, 2023), https://www.fool.com/investing/2023/02/02/heres-why-t-mobile-could-repeat-its-20-gains-from/.

[105] The Infrastructure Investment and Jobs Act allocated $42 billion for the Broadband Equity, Access, and Deployment ("BEAD") Program and $1 billion for the Middle Mile Program. The American Rescue Plan Act allocated $10 billion for the Capital Projects Fund and $7 billion for the Emergency Connectivity Fund, as well as $350 billion in general emergency funding for the State and Local Fiscal Recovery Fund, of which approximately $9 billion has been budgeted for broadband. *See* Nat'l Conf. of State Legislatures, *ARPA State Fiscal Recovery Fund Allocations Database*, https://www.ncsl.org/fiscal/arpa-state-fiscal-recovery-fund-allocations (last visited Dec. 4, 2023).

[106] FCC, *National Broadband Map*, https://broadbandmap.fcc.gov/ (displaying data as of December 31, 2022, and last updated November 28, 2023).

connections available to 88 percent of the country.[107] The cable industry in particular is continuously expanding its footprint to reach more Americans in urban and rural areas across the nation, such that approximately 85 percent of U.S. households have access to cable high-speed Internet.[108] And consumers are increasingly subscribing to broadband at higher speeds.[109]

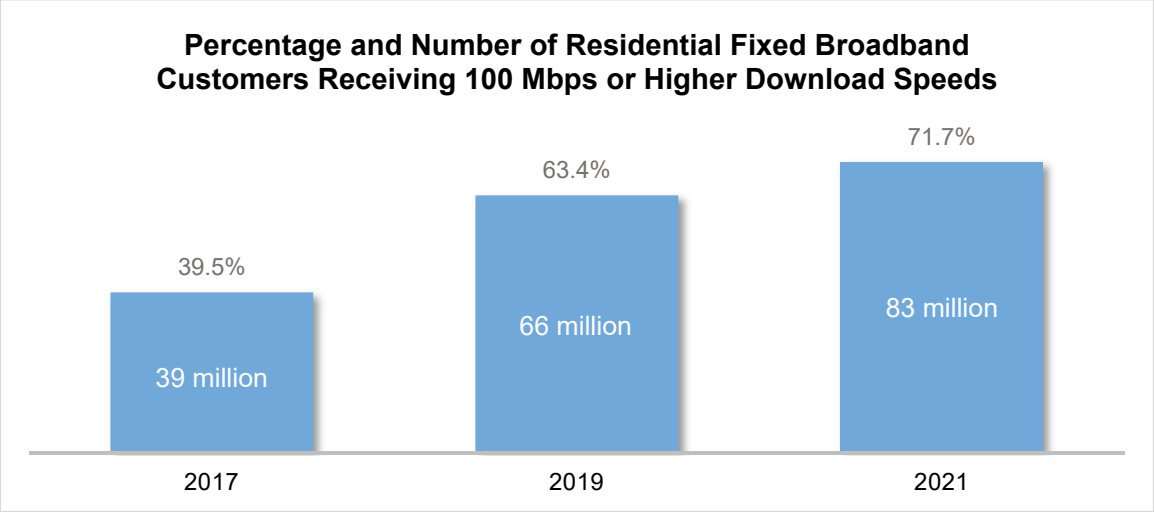

Fig. 15. *Source:* FCC Internet Access Services Reports.

Cable operators like Comcast have responded to competition by making robust investments, ensuring that cable broadband remains competitive amid ever-increasing consumer demand for greater speeds, bandwidth, reliability, and overall performance. In the past five years, Comcast has made more than $20 billion in investments to its network, which is

[107] *The Future is 10G*, NCTA – The Internet & Television Association, https://www.ncta.com/positions/the-future-of-superfast-internet (last visited Dec. 4, 2023).

[108] *Industry Data*, NCTA – The Internet & Television Association, https://www.ncta.com/industry-data/85-of-us-households-have-cable-high-speed-internet-available (last visited Dec. 4, 2023).

[109] *See* Comcast Corp., *Q2 2023 Earnings Call Edited Transcript* 8 (July 27, 2023), https://www.cmcsa.com/static-files/2e298a09-7822-4559-b505-013633ae7c43 ("I think when talking about [the broadband] environment; you got to start where the market is and where the customer is going. And the customers continue to be highly engaged in multiple broadband applications, streaming, gaming, all trending up."); *id.* at 5 ("We continue to see the use cases for better and faster Internet increase. Demand for higher speeds is increasing, as is average network consumption . . . . We plan for our network and product capabilities to stay far ahead of demand, so that we maintain our position as a market leader delivering the best broadband possible.").

architected to deliver a secure, future-proof experience for customers over *both* hybrid fiber-coax ("HFC") and fiber-to-the-home ("FTTH") technologies.[110]

C. ISPs' Competition-Driven Investments and Innovations Are Producing Faster Speeds and More Service Quality Enhancements Than Ever Before.

The competitive broadband marketplace is leading to faster and better broadband.[111] As a result, consumer satisfaction with home broadband is very high—and still increasing.[112]

1. Tremendous Increases in Speeds and Decreases in Latency

Market forces have driven a long-run trend of dramatic and steady increases in broadband speeds. Ookla data show that average fixed broadband speeds in the United States have increased by about 30 percent *annually* since 2010.

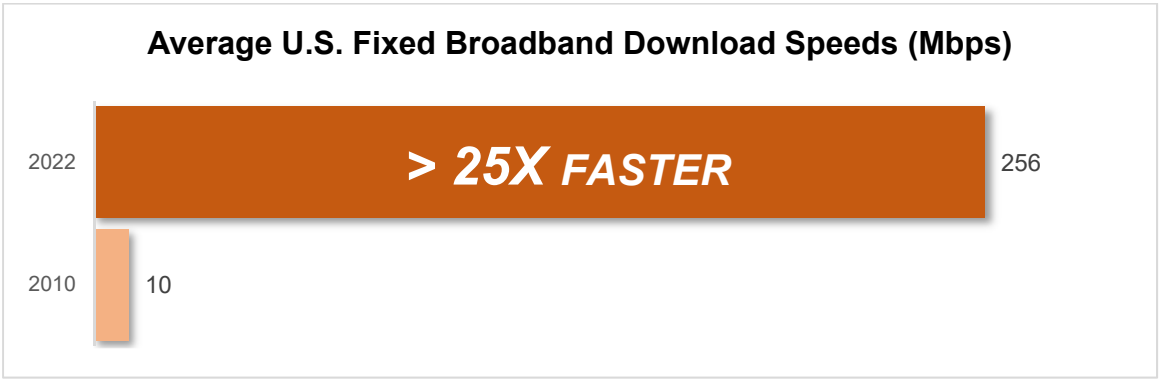

Fig. 16. *Source:* Ookla.

[110] *Future-Proofing for Tomorrow, Today: Why Building a Network for the Future Benefits People Right Now*, Comcast Stories (Oct. 2, 2023), https://corporate.comcast.com/stories/future-proofing-building-network-future-benefits-people-right-now.

[111] *See, e.g.*, Jianmin Tang, *Competition and Innovation Behaviour*, 35 Rsch. Pol'y 68, 81 (2006) (explaining that competition is generally "positively correlated" with innovation and that "quick obsolescence of products is positive for product innovation"); Aura García Pabón & Antonio Capobianco, *Competition and Innovation: A Theoretical Perspective*, OECD Competition Policy Roundtable Background Note 5, 32 (2023) (explaining that "[w]hen companies in competitive markets engage in innovation, market forces trigger all the benefits" and that there is a "long-standing view that competition drives innovation and that innovation, in turn, drives higher welfare and economic growth"); Richard J. Gilbert, *Competition and Innovation*, 1 J. Indus. Org. Educ. 1 (2006) (reviewing economic literature that relates competition to innovative activity).

[112] *America's Viewpoint: Consumer Insights*, NCTA – The Internet & Television Association, https://www.ncta.com/consumer-insights (last visited Dec. 4, 2023) (reporting Morning Consult findings that, as of September 2023, 85% of Americans are satisfied with their home broadband service, and showing that satisfaction levels have increased since 2019) ("*2023 Morning Consult Broadband Satisfaction Survey*").

Rapid increases in U.S. broadband speeds have not been limited to wireline services. With the advent of 5G and other advances in wireless technology, intermodal competition has exploded as wireless speeds are racing to catch up to their wireline rivals.

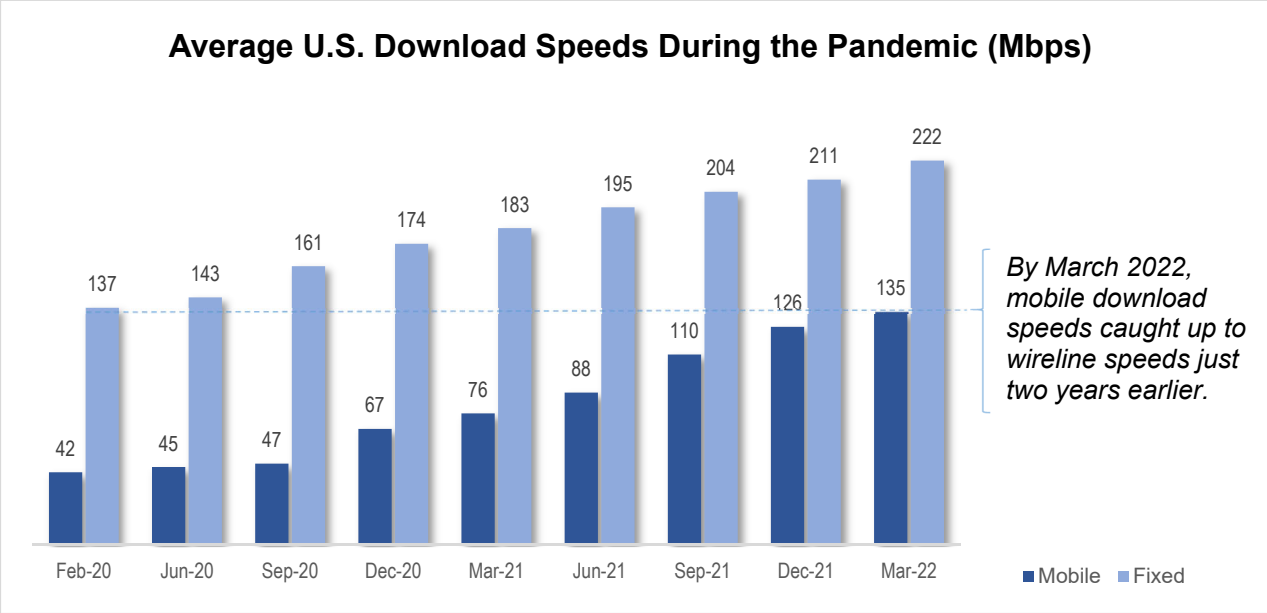

Fig. 17. *Source:* Ookla.

During the pandemic alone, wireless speeds more than *tripled* and fixed speeds nearly *doubled*, as private providers rose to the challenge of ensuring improved connectivity for Americans when they needed it most. Indeed, the fact that U.S. broadband networks performed superbly despite unprecedented demands during the pandemic—under a pro-investment, light-touch Title I framework—undermines suggestions by some that America's pandemic experience somehow weighs in favor of Title II classification.[113]

[113] *See* Brian A. Rankin, *Here We Go Again: FCC Tries to Bring Back Failed 'Net Neutrality' Regulation*, Competitive Enter. Inst. (Sept. 27, 2023), https://cei.org/blog/here-we-go-again-fcc-tries-to-bring-back-failed-net-neutrality-regulation/. By contrast, European broadband networks that are subject to pervasive utility regulation fared much worse, with EU officials going so far as to call on streaming services and their customers to "ditch high definition video to keep the [I]nternet from breaking." Hadas Gold, *Netflix and YouTube Are Slowing Down in Europe to Keep the Internet From Breaking*, CNN.com (Mar. 20, 2020), https://www.cnn.com/2020/03/19/tech/netflix-internet-overload-eu/index.html.

Comcast's success in meeting and exceeding the extraordinary demand put on its network during the stress test of the pandemic meant mobilizing two years' worth of network enhancements in a span of only a few months. These enhancements not only stabilized the network, but also strengthened it to sustain *multiple* rounds of speed increases at *no additional cost to consumers*. Comcast's ability to make such enhancements was itself a function of years of *competition-driven* investment in research and development to virtualize important aspects of network management and deliver advanced Wi-Fi. Key Comcast performance innovations in recent years include:

- Octave, an AI-based platform that checks 4,000+ telemetry data points on tens of millions of modems across Comcast's network every 20 minutes and automatically makes adjustments to ensure efficient use of bandwidth.[114]
- Virtual Cable Modem Technology System and Broadband Network Gateway/Remote Optical Line Terminal platform, enabling more efficient load balancing to alleviate congestion and improve reliability and overall performance.[115]
- xFi Advanced Gateways supporting multi-gig speeds and higher throughput, more bandwidth to support more devices, advanced security, secondary networks, parental controls, user-friendly Wi-Fi management tools, and more.[116]

[114] Elad Nafshi, *COVID-19 Network Report: How A Smart Network Delivered Speed and Stability When it Mattered*, Comcast Stories (July 13, 2020), https://corporate.comcast.com/stories/covid-19-network-report-smart-network-speed-and-stability.

[115] Elad Nafshi, *A Brilliant Network to Every Home Regardless of the Wire*, Comcast Stories (Mar. 2, 2023), https://corporate.comcast.com/stories/comcast-brilliant-network-every-home.

[116] *See Overview of Xfinity Gateways*, Comcast, https://www.xfinity.com/support/articles/broadband-gateways-userguides (last visited Dec. 4, 2023); Press Release, Comcast Corp., *Comcast Launches New WiFi 6E Gateway – Its Most Powerful WiFi Device to Date* (Jan. 3, 2022), https://corporate.comcast.com/press/releases/comcast-wifi-6e-fastest-router-gateway-10G-low-latency (explaining that the xFi Advanced Gateway will "reduce interference and increase bandwidth in the home by 3X to support the massive influx of connected devices used by consumers today"); *see also xFi Complete: our best in-home WiFi*, Comcast, https://www.xfinity.com/learn/internet-service/xfi-complete (last visited Dec. 4, 2023) (explaining that xFi Complete opens up even more ways for customers to manage and customize their home networks by assigning user profiles, viewing and controlling which devices are connected, and optimizing network settings).

- Active Queue Management system nationally to improve latency, particularly when paired with low latency DOCSIS ("LLD") implementation by the end of this year.[117]

As a result of these competition-driven investments and innovations, the more than 61 million homes passed by Comcast's network currently have access to speeds up to 1.2 Gbps, with over 99.9 percent network reliability.[118] And Xfinity gigabit Internet customers with xFi Gateways enjoy a median latency of only 13 milliseconds. Comcast has also committed to the nation's largest and fastest multi-gig rollout over its existing fiber-rich HFC network. By 2025, more than 50 million homes and businesses in Comcast's current footprint will have access to technologies enabling multi-gig download and upload speeds.[119] And these upgrades, which have already begun,[120] will be deployed equitably across Comcast's entire footprint.[121]

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[117] Jason Livingood, *Comcast Kicks Off Industry's First Low Latency DOCSIS Field Trials*, Comcast Stories (June 16, 2023), https://corporate.comcast.com/stories/comcast-kicks-off-industrys-first-low-latency-docsis-field-trials. An emerging network technology, LLD manages low latency flows for latency-sensitive applications like FaceTime and cloud gaming services, leveraging app developers' "mark[ing]" of latency-sensitive traffic to optimize the performance and quality of such applications. *Id*. In the industry's first-ever LLD field trials, Comcast collaborated with Apple, NVIDIA, and Valve earlier this year to showcase the "dramatic[]" improvements and exciting new use cases LLD will enable—demonstrating how broadband has helped make edge-provider innovation possible under a light-touch regulatory framework. *Id*.

[118] *5 Questions You Must Ask When Considering 5G Home Internet vs Cable*, Xfinity, https://www.xfinity.com/hub/internet/5g-home-internet-versus-cable (last visited Dec. 4, 2023).

[119] Press Release, Comcast Corp., *Comcast Accelerates Nation's Largest and Fastest Multi-Gig Rollout* (Feb. 9, 2023), https://corporate.comcast.com/press/releases/comcast-multi-gig-rollout-xfinity-10g-network-upgrade; CableLabs, *DOCSIS 4.0 Technology*, https://www.cablelabs.com/technologies/docsis-4-0-technology (last Dec. 4, 2023).

[120] Press Release, Comcast Corp., *Comcast to Deliver Multi-Gig Symmetrical Speeds in World-First DOCSIS 4.0 Deployment* (Oct. 12, 2023), https://corporate.comcast.com/press/releases/comcast-multi-gig-symmetrical-speeds-world-first-docsis-4-deployment; *see also* Masha Abarinova, *Comcast First to Deploy DOCSIS 4.0, Touts 2-Gig Symmetrical Speeds*, FierceTelecom (Oct. 12, 2023), https://www.fiercetelecom.com/broadband/comcast-first-deploy-docsis-40-touts-2-gig-symmetrical-speeds.

[121] David Don, *What the Next-Generation Xfinity 10G Network Means for Americans Everywhere*, Comcast Public Policy (Aug. 1, 2023), https://corporate.comcast.com/stories/what-the-next-generation-xfinity-10g-network-means-for-americans-everywhere.

2. *Increased Resiliency, Reliability, and Cybersecurity Protections*

While the NPRM suggests that Title II reclassification is necessary to address cyber threats,[122] broadband providers are *already* delivering what their consumers demand under the current light-touch regulatory framework: consumer satisfaction surveys show that 88 percent of Americans are satisfied with the security of their home broadband service, and 85 percent are satisfied with its reliability.[123]

Given the demands of a highly dynamic marketplace, Comcast has been a leader in hiring the top talent in the field and developing and adopting security tools to address vulnerabilities that could threaten the security and integrity of its network and the greater Internet ecosystem.[124] For example:

- *Border Gateway Protocol ("BGP")*: Comcast collaborates with public and private stakeholders on BGP security;[125] contributes to key BGP best practices;[126] and supports critical research and development for routing security,[127] including

[122] NPRM ¶ 30.

[123] *2023 Morning Consult Broadband Satisfaction Survey*; *accord* Jonathan Schwantes, *Broadband Pricing: What Consumer Reports Learned From 22,000 Internet Bills*, Consumer Reports 34 (Nov. 17, 2022), https://advocacy.consumerreports.org/wp-content/uploads/2022/11/FINAL.report-broadband.november-17-2022-2.pdf (82% consumer satisfaction with reliability of Internet service).

[124] *See, e.g.*, Jason Livingood, *Improved BGP Routing Security Adds Another Important Layer of Protection to Online Networks*, Comcast (May 17, 2021), https://corporate.comcast.com/stories/improved-bgp-routing-security-adds-another-layer-of-protection-to-network ("There's nothing more important than keeping our customers and their information safe and secure . . . .").

[125] *See* NPRM ¶ 31 (highlighting BGP vulnerabilities as a particular cybersecurity concern); *Secure BGP Deployment*, Final Report, CSRIC III WG-6 (Mar. 2013), https://transition.fcc.gov/bureaus/pshs/advisory/csric3/CSRIC_III_WG6_Report_March_%202013.pdf; *Long-Term Core Internet Protocol Improvements*, Final Report, CSRIC IV WG-6 (Sept. 2014), https://transition.fcc.gov/bureaus/pshs/advisory/csric4/CSRIC%20IV%20WG6%20DNS%20%20BGP%20-%20Final.pdf.

[126] The Mutually Agreed Norms for Routing Security ("MANRS"), for example, is a set of best practices for BGP and routing security targeting the three most common classes of routing threats: incorrect routing information; traffic with spoofed source IP addresses; and lack of coordination and collaboration between networks.

[127] *See Comcast Innovation Fund 2018 Annual Report*, Comcast, https://www.behance.net/gallery/93606817/Comcast-Innovation-Fund-Report-2018-Annual-Report?locale=en_US.

by funding research that led to the creation of the Automatic and Real-Time Detection and Mitigation System ("ARTEMIS").[128]

- *DataBee*: Comcast's security data fabric platform, which was recently made available to the broader marketplace,[129] exemplifies "security by design," leveraging security threat data from various sources to accelerate the detection of cybersecurity threats and reduce false positives.[130]

- *Apache Log4j*: In 2022 alone, Comcast's network security technologies prevented nearly 105 million Log4j exploit attempts.[131]

- *Distributed Denial of Service ("DDoS")*: Over the same period, Comcast's cybersecurity protocols successfully detected 51,915 DDoS attacks.[132]

These are just a few of the many examples of the dynamic broadband marketplace innovating at the rapid pace needed to keep up with the evolving cyber threat landscape—a pace which new regulatory overhang will only slow.

Comcast's networks are not just secure, they are also reliable and resilient. For example:

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[128] ARTEMIS is a self-operated, control-plane system that uses local information and real-time BGP feeds to provide timely detection and mitigation of potential prefix hijacking within one minute. Pavlos Sermpezis et al., Ctr. for Applied Internet Data Analysis at the University of California San Diego, *ARTEMIS: Neutralizing BGP Hijacking Within a Minute* 13, 15, https://www.caida.org/catalog/papers/2018_artemis/artemis.pdf (last visited December 4, 2023).

[129] Jeff Baumgartner, *Comcast Helps Fortune 500s Hunt Down Cybersecurity Threats with 'DataBee'*, Light Reading (May 2, 2023), https://www.lightreading.com/security/comcast-helps-fortune-500s-hunt-down-cybersecurity-threats-with-databee-.

[130] *See* Noopur Davis, *Secure Customers Are What Matter Most*, Comcast Stories (Apr. 26, 2023), https://corporate.comcast.com/stories/noopur-davis-secure-customers-are-what-matter-most; Noopur Davis, *It's Time to Bring Digital Transformation to Cybersecurity*, Comcast Stories (July 11, 2023), https://corporate.comcast.com/stories/its-time-to-bring-digital-transformation-to-cybersecurity; Lisa Croel, *Introducing DataBee™: Sweetening the Security, Risk and Compliance Challenges of the Large Enterprise*, Comcast Technology Solutions Blog (Apr. 18, 2023), https://www.comcasttechnologysolutions.com/blog/introducing-databeetm-sweetening-security-risk-and-compliance-challenges-large-enterprise; Jeff Baumgartner, *Comcast Helps Fortune 500s Hunt Down Cybersecurity Threats with 'DataBee'*, Light Reading (May 2, 2023), https://www.lightreading.com/security/comcast-helps-fortune-500s-hunt-down-cybersecurity-threats-with-databee-.

[131] Press Release, Comcast Corp., *Comcast Business Report Finds Global Cybersecurity Community at a Crossroads as Technology Advancements Accelerate* (July 31, 2023), https://corporate.comcast.com/press/releases/comcast-business-report-global-cybersecurity-technology-advancements-accelerate.

[132] *Id.*

- Comcast uses smart technology developed by in-house engineers to proactively identify and repair customer-impacting network impairments.[133]

- Octave, noted above, helps check for and resolve network "noise," power levels, and other technical issues that can inhibit reliable performance.[134]

- NetIQ uses machine learning to monitor Comcast's core network continuously, enabling dramatically faster outage detection and correction.[135]

- Storm-Ready WiFi includes a rechargeable battery and cellular connectivity to keep customers connected during network or power outages, and doubles as a Wi-Fi extender.[136]

* * * * *

All these fruits of innovation—faster speeds, lower latency, greater resiliency and reliability, etc.—can be traced directly or indirectly to the dynamics fostered by a light-touch regulatory environment. As discussed above, this sort of competition-driven innovation is alien to a public utility model.[137] Utilities have to be prodded to invest and innovate. The history of telecommunications is littered with examples of Title II common carriers dragging their feet in

[133] Dean Takahashi, *Comcast can now pinpoint fiber optic cable breaks within minutes*, VentureBeat (July 22, 2021), https://venturebeat.com/entrepreneur/comcast-can-now-pinpoint-fiber-optic-cable-breaks-within-minutes/ (explaining that Xfinity Fiber Meter allows Comcast to "pinpoint breaks in its fiber optic cables throughout its network within 90 seconds," enabling Comcast to dispatch repair crews to any such breaks immediately and get customers back online faster).

[134] Elad Nafshi, *The Road to 10G: Using Prisms and Sonars to Increase Network Reliability*, Comcast Network and Engineering (July 22, 2021), https://corporate.comcast.com/stories/10g-network-evolution-using-prisms-and-sonars-to-increase-network-reliability.

[135] Elad Nafshi, *COVID-19 Network Report: How A Smart Network Delivered Speed and Stability When it Mattered*, Comcast Stories (July 13, 2020), https://corporate.comcast.com/stories/covid-19-network-report-smart-network-speed-and-stability.

[136] Press Release, Comcast Corp., *Comcast Is The First Internet Provider to Offer a Back-Up Connectivity Device Designed to Keep Customers Connected During a Storm* (Aug. 15, 2023), https://corporate.comcast.com/press/releases/comcast-internet-provider-back-up-connectivity-device-connected-during-storm.

[137] *See supra* Part II.B.

the development of products and services that ultimately proved popular with consumers—in stark contrast to the rapid and continuing innovation in the broadband industry today.[138]

V. CONCLUSION

More than five years after pronouncements of the Internet's "slow death," the Internet ecosystem is in fact vibrantly alive and full of accelerating positive dynamics. This is not due to luck or happenstance. The broadband marketplace has been robustly competitive and responsive to consumer demand under the current Title I framework. Imposition of utility regulations developed for monopoly services would risk harming a healthy marketplace that has been highly successful in an era of rapidly increasing demand. Comcast respectfully and strongly urges the Commission to decline to adopt its unjustified and counterproductive proposal to classify broadband as a Title II telecommunications service subject to heavy-handed utility regulation.

[138] *See, e.g.*, F.M. Scherer, Am. Antitrust Inst., *Technological Innovation and Monopolization* 24 (2005), https://www.antitrustinstitute.org/wp-content/uploads/2018/08/431.pdf ("AT&T was . . . slow in introducing such technological innovations as automatic dialing, monolithic handsets, anti-sidetone circuitry, and office switchboards with enhanced features."); *see also Economics of Regulation*, Vol. II, at 297 n.122 (discussing a DOJ complaint documenting "six alleged instances of [delays] in the introduction of major equipment innovations"); *id.*, Vol. II, at 304 n.143 (discussing the Bell companies' postponement of "the introduction of improvements such as the hand set and dial system for many years so that its old equipment might wear out before it was junked"); Jessica MacNeil, *Touch Tone Phones Are Invented, November 18, 1963*, EDN (Nov. 18, 2019), https://www.edn.com/tone-dialing-telephones-are-introduced-november-18-1963/ (discussing how it took until 1963, nearly 50 years after the release of the rotary phone, for telephone companies to advance the technology and produce the touch-tone push button phone, despite the idea for the device predating the invention of the rotary dial).

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