

Comment

In the Matter of Restoring Internet Freedom

Notice of Proposed Rulemaking

July, 2017

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In the Matter of)
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Restoring Internet Freedom) **WC Docket No. 17-108**
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Comment

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I. Overview

I support the Commission's proposals to classify broadband Internet access service (BIAS) as an information service and to eliminate the Internet conduct standard.¹ The 2015 decision² to change the long-standing classification of BIAS and of mobile broadband to telecommunications services was motivated not by genuine concerns of consumer harm but by misplaced political expediency and rent-seeking behavior by buyers, suppliers, substitutes and competitors of BIAS providers.

The Internet conduct standard, also known as the "General Conduct Rule," is inherently vague and uncertain. Along with the 2015 Order's public utility classification, it has dangerously and needlessly warped the competitive dynamic of the deeply interconnected Internet ecosystem, acting as overarching deterrents to innovation not only by BIAS providers, but by all participants.

The Commission adopted these measures without a hint of the detailed technical, economic, or policy analysis necessary to support so profound a reversal in public policy. Had the Commission conducted that review, it would not have pursued such a radical and dangerous a course of action.³

The 2017 NPRM has explicitly requested comments on the risk to innovation created by the 2015 Order.⁴ This comment addresses four specific sources of damage to innovation inflicted by the 2015 Order, specifically to the disruptive innovation characteristic of and essential to Internet-based entrepreneurship:

¹ Federal Communications Commission, *In the Matter of Restoring Internet Freedom*, WC Docket No 17-108, Notice of Proposed Rulemaking, May 23, 2017, (hereinafter "2017 NPRM") at ¶¶ 25, 73.

² Federal Communications Commission, *In the Matter of Protecting and Promoting the Open Internet*, GN Docket No. 14-28, Report and Order, March 12, 2015 (hereinafter "2015 Order").

³ See John Mayo, Larry Downes, et. al., *Assessing the Economic Benefits and Costs of the FCC's Imposition of Title II Regulation*, Economic Policy Vignette 2015.8.6, Georgetown Center for Business and Public Policy, August, 2015, available at http://www.gcbpp.org/files/EPV/EPV_FCCsTitleIIOrder_82015.pdf.

⁴ 2017 NPRM at ¶ 4, 25, 44, 49.

- **The 2015 Order violated “The Law of Disruption”** – In “reclassifying” BIAS as a telecommunications service, the 2015 Order slowed the speed of broadband innovation, scrambled competitive dynamics throughout the Internet ecosystem, and invited counter-productive rent-seeking behavior by non-BIAS providers.
- **Utility treatment for BIAS is fundamentally at odds with disruptive innovation** – Public utilities, as more than a century of experience has demonstrated, face potent disincentives in developing disruptive innovations necessary for the continued development of the Internet. By design, public utilities do not compete, nor do they innovate.
- **The 2015 Order dangerously and needlessly skews critical future innovations** - Title II, coupled with the vague General Conduct Rule, discourages BIAS providers from continued innovation in two critical areas: network management techniques and the architecture of next-generation networks, in particular 5G mobile networks.
- **“Permissionless” innovation has been replaced with pre-emptive regulation** – The lack of standards for enforcement of the General Conduct Rule and the byzantine process by which BIAS providers were encouraged to seek non-binding “advisory opinions” regarding prospective changes to technology, services, and business practices effectively revoked a twenty-year endorsement of “permissionless” innovation, critical to the phenomenal success of the Internet during that period and in the future.

II. The 2015 Order violated “The Law of Disruption”

The 2015 Order upended a strongly bi-partisan policy, first adopted in 1996, to leave the Internet “unfettered by Federal or State Regulation,”⁵ a far-sighted decision by Congress, the Clinton Administration, and FCC Chairmen at the time and since. The “light touch” approach to Internet regulation both sparked and supported two decades of intense private investment, dynamic competition, and innovation in the emerging Internet ecosystem.

As a result, technology-based innovation in the digital age, particularly in the U.S., has followed a rapid and accelerating trajectory, fed by engineering and business forces that combine to make next-generation products and services both better and cheaper than those they replace. My co-author and I have described these disruptive innovations as Big Bang Disruptions,⁶ a turbo-charged version of the kind of business and social changes economist Joseph Schumpeter long-ago described as “creative destruction”—the “essential feature” of capitalism.⁷

Throughout the nearly twenty years that preceded the 2015 Order, Big Bang Disruptions generated trillions of dollars in new economic value, created millions of new jobs, reshaped industries, and empowered consumers in ways unthinkable as recently as a decade ago. They have inspired trillions more in private investment in infrastructure, hardware, and software and services. And they have incubated a new generation of entrepreneurs who believe any goal is achievable with the right combination of technology, investment, and strategy.

⁵ The Communications Decency Act (hereinafter “1996 Act”), *codified at* 47 U.S.C. § 230(b)(2) (1996). *See also* 47 U.S.C. § 230(a)(4); 47 U.S.C. 230(e)(2).

⁶ Larry Downes and Paul Nunes, *Big-Bang Disruption*, HARVARD BUSINESS REVIEW, March, 2013, pp. 44-56. *See also* Larry Downes and Paul Nunes, *BIG BANG DISRUPTION: STRATEGY IN THE AGE OF DEVASTATING INNOVATION* (Portfolio 2014). As of mid-2017, 12 of the 20 most valuable Internet companies are U.S. based, 11 of which did not exist in 1996. Seven of the remaining companies are Chinese; one is based in Japan. None are based in the EU. *See* Mary Meeker, *Internet Trends 2017*, May 31, 2017 at page 322, *available at* <https://www.recode.net/2017/5/31/15693686/mary-meeker-kleiner-perkins-kpcb-slides-internet-trends-code-2017>.

⁷ Joseph Schumpeter, *CAPITALISM, SOCIALISM AND DEMOCRACY* 83-84, 87, (1942).

Nowhere is the better and cheaper transformation of industry more visible than in the industries directly and indirectly affected by the FCC.⁸ As speeds increase while prices for voice, video and data transmission continue to plummet,⁹ incumbents have scrambled to reinvent their businesses from within what are often closely-regulated constraints.¹⁰ Content providers, device manufacturers, and operating system developers have increased their competitive leverage. In response, regulated voice, video and data carriers have diversified into new businesses and new technologies, now offering digital voice and multi-channel video services, as well as some of the most robust mobile broadband networks in the world.

Big Bang Disruption has an equally profound impact on the relationship between technology and the regulations that affect them. Since the 1960's digital technology has improved exponentially, while social, economic and legal systems continue to change incrementally, a phenomenon I first referred to in 1998 as "The Law of Disruption."¹¹ The Law of Disruption is the principal driver of dynamism in industries affected by digitization, forcing rapid innovation by every participant at an accelerating pace. As the differing speeds of technical change and regulatory change diverge

⁸ Downes and Nunes, *supra* note 6, at 23-24. See also Jeffrey Eisenach, Broadband Competition in the Internet Ecosystem, AEI Economic Studies, October, 2012, available at http://www.aei.org/wp-content/uploads/2012/10/-broadband-competition-in-the-internet-ecosystem_164734199280.pdf.

⁹ See, e.g., Ryan Knutson, *The New Sticker Shock: Plunging Cellphone Bills*, THE WALL STREET JOURNAL, June 23, 2017, available at <https://www.wsj.com/articles/the-new-sticker-shock-plunging-cellphone-bills-1498232910?mg=prod/accounts-wsj>; Akamai, *State of the Internet Q1 2017 Report*, Vol, 10, Num. 1, available at <https://www.akamai.com/us/en/multimedia/documents/state-of-the-internet/q1-2017-state-of-the-internet-connectivity-report.pdf>; Federal Communications Commission, *In the Matter of Business Data Services in an Internet Protocol Environment, Technology Transitions, Special Access for Price Cap Local Exchange Carriers AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, Report and Order, WC Docket No. 16-143, GN Docket No. 13-5, WC Docket No. 05-25, RM-10593, April 28, 2017 at ¶¶ 70-73, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-17-43A1.pdf.

¹⁰ Charles H. Fine & John M. de Figueiredo, *Can We Avoid Repeating the Mistakes of the Past in Telecommunications Regulatory Reform?* 8 (Mass. Inst. of Tech. Commc'ns Futures Program, Working Paper No. 2005-001, 2005), available at <http://bit.ly/1UUpwgz>.

¹¹ Larry Downes and Chunka Mui, *UNLEASHING THE KILLER APP: DIGITAL STRATEGIES FOR MARKET DOMINANCE* (Harvard Business School Press 1998); see also Larry Downes, *THE LAWS OF DISRUPTION* (Basic Books 2009). See also Gordon E. Moore, *Cramming More Components onto Integrated Circuits*, 38 *Electronics* 8 (April 19, 1965), available at <https://drive.google.com/file/d/0By83v5TWkGjvQkpBcXJKT1I1TTA/view>.

ever farther, there is a growing risk of negative unintended consequences, even when interventions are undertaken with the best of intentions.¹²

The 2015 Order, in reclassifying BIAS as a telecommunications service, increased the gap between potential innovation by BIAS providers and the reality of innovation at the pace of regulatory change. In doing so, it violated the Law of Disruption in three critical respects:

1. Slowed the speed of innovation - In subjecting broadband access to some (or, eventually, all) of the regulatory mass of Title II, the Order reversed course on two decades of light-touch regulation, replacing it with rules accreted over nearly a century of intense oversight of monopoly analog telephone service. Prior to reclassification, the Internet ecosystem had been left to evolve largely on its own, regulated not by the FCC and state utility commissions but by the exponential improvements of core computing technologies and a multi-stakeholder, engineering-driven process for defining new standards and protocols.

Under Title II, that highly-efficient process was displaced not only by an inherently slower regulatory system, but using ossified rules customized for an earlier technology that was explicitly regulated as a mature public utility--the worst possible fit for a technology still undergoing revolutionary change and improvement.¹³ Moreover, the FCC's malleable and discretionary forbearance from some parts of Title II exacerbated the uncertainty of

¹² Larry Downes and John W. Mayo, *The Evolution of Innovation and the Evolution of Regulation: Emerging Tensions and Emerging Opportunities in Communications*, 23 Comm Law Conspectus No. 1 at 10-51 (2014), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2542362.

¹³ Larry Downes, *Why the Public Utility Model is the Wrong Approach for the Internet*, HARVARD BUSINESS REVIEW, Nov. 11, 2014, available at <https://hbr.org/2014/11/why-the-public-utility-model-is-the-wrong-approach-for-internet-regulation>; Larry Downes, *Why Treating the Internet as a Public Utility is Bad for Consumers*, THE WASHINGTON POST, July 7, 2016, available at https://www.washingtonpost.com/news/innovations/wp/2016/07/07/why-treating-the-internet-as-a-public-utility-is-bad-for-consumers/?utm_term=.de252c7e58bc.

just what it was BIAS providers could and could not do, further discouraging continued innovation.¹⁴

Uncertainty turned quickly to actual harm as the Commission, invoking its self-granted Title II powers, subjected BIAS providers alone to restrictive new rules for data collection and use. These new rules, incompatible with the wildly successful policy developed and enforced by the Federal Trade Commission, defined vague and arbitrary categories of “sensitive data” whose collection and use, for the first time in the history of the commercial Internet, required BIAS providers to obtain *ex ante* permission from consumers.¹⁵

The FCC’s new rules, since disapproved by Congress, substantially reduced the likelihood of competition and continued innovation in Internet-based advertising markets. Worse, the rules would have applied only to BIAS providers, which are essentially new entrants with almost no market share, let alone market control.¹⁶

2. Scrambled competitive dynamics throughout the ecosystem - The 2015 Order failed to acknowledge the impact that backward-looking change would have not only on continued innovation by BIAS providers and their partners, but on every component of the

¹⁴ In the forbearance discussion that comprised the majority of the 2015 Order, the phrases “for now” and “at this time” are repeated a dozen times.

¹⁵ Larry Downes, *The Downside of the FCC’s New Privacy Rules*, HARVARD BUSINESS REVIEW, May 27, 2016, available at <https://hbr.org/2016/05/the-downside-of-the-fccs-new-internet-privacy-rules>; Larry Downes, *Industry Groups Beg Congress, FCC, to Restore Scrambled Privacy Rules*, FORBES, Jan. 30, 2017, available at <https://www.forbes.com/sites/larrydownes/2017/01/30/industry-groups-beg-congress-fcc-to-restore-scrambled-internet-privacy-framework/#27be8f128871>.

¹⁶The multi-billion market for Internet advertising, on which most free or subsidized content and services rely, is increasingly dominated by just two companies: Google and Facebook. Google accounts for over 40% of the \$83 billion digital ad market and nearly 80% of total US search ad revenues. Facebook, which dominates display ads, will earn \$16 billion this year alone. Of course, the FCC rulemaking was only made necessary by the 2015 Order, which had the effect, intended or otherwise, of divesting the FTC of its jurisdiction over BIAS providers. Larry Downes, *Why Congress’s Rejection of Proposed FCC Rules Will Not Affect Your Privacy in the Slightest*, FORBES, March 30, 2017, available at <https://www.forbes.com/sites/larrydownes/2017/03/30/why-congresss-rejection-of-proposed-fcc-data-rules-will-not-affect-your-privacy-in-the-slightest/#4fded0038b14>.

broadband market. Though the 2015 Order referenced an “Internet ecosystem” thirty times, the Commission failed to make the logical connection that within a deeply interconnected collection of companies, severe restrictions on the providers of key inputs would have ripple effects throughout the environment.

Public utility regulation for one part of the ecosystem has slowed the pace of innovation for everyone. That effect was seen almost immediately, as the Commission began a free-wheeling investigation in 2016 into innovative “zero-rated” Internet services. Though some zero-rating programs are initiated by BIAS providers, others are the creation of leading content providers including Facebook, Netflix, and Wikipedia.¹⁷ Most are collaborations. By expressing—without resolving—doubts about the legality of zero-rating, the Commission introduced unnecessary uncertainty throughout the market, even without ever finding a violation of the 2015 Open Internet rules.¹⁸

A preliminary report, issued in 2017, identified a jumble of unrelated and economically unsound criteria by which the agency would review such programs, then tentatively concluded that some existing programs “may” violate the undefined General Conduct Rule. Of four programs reviewed, the Bureau Report found that two did not violate the review criteria. For one of the other two programs, the report concludes that “Based on the information gathered to date, we believe *there is a substantial possibility* that some of AT&T’s practices *may* violate the General Conduct Rule.” For the fourth, Verizon’s FreeBee Data 360 program, the report concluded that its “structure” *may pose concerns* for the same reasons as AT&T’s Sponsored Data program discussed above.”¹⁹

¹⁷ See Larry Downes, *The FCC’s War on the Internet Targets Facebook*, FORBES, June 1, 2015, available at <https://www.forbes.com/sites/larrydownes/2015/06/01/the-fccs-war-on-the-internet-targets-facebook/2/#4872cad06b14>; Larry Downes, *Netflix Still Can’t Make Up Its Mind About Net Neutrality*, FORBES, April 17, 2015, available at <https://www.forbes.com/sites/larrydownes/2015/04/17/netflix-still-cant-make-up-its-mind-about-net-neutrality/#3f11f74c6f70>.

¹⁸ See Federal Communications Commission, *Wireless Telecommunications Bureau Report: Policy Review of Mobile Broadband Operators’ Sponsored Data Offerings for Zero-Rated Content and Services*, Jan. 9, 2017, available at https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0111/DOC-342987A1.pdf.

¹⁹ *Id.* (emphasis added)

More serious skewing of the competitive dynamic within the Internet ecosystem is sure to follow until reclassification is undone, a conclusion that is hardly controversial. Since at least 1980, management science has understood that beneficial market discipline from competition is generated not simply by rivalry among direct competitors but by other industry participants, including buyers, suppliers, new entrants and providers of substitute products and services.²⁰

Within an ecosystem, companies representing all five of these categories can exert considerable influence on the behavior of every other entity; indeed, that is the definition of an ecosystem.²¹ In the mobile broadband market, for example, competitive pressure is increasingly exerted on network operators by suppliers, including dominant smartphone, operating system and application providers. As buyers (i.e., consumers) demonstrate strong preference, some suppliers, notably Apple and Google, gained considerable competitive leverage.²²

Broadband providers have been forced to innovate rapidly and repeatedly, lowering prices, improving and expanding infrastructure, increasing service levels and radically altering business models, generating considerable consumer surplus in the process. As mobile networks improve, in turn, they are increasingly exerting market discipline on wired providers, increasingly a viable substitute. Satellite and Wi-Fi (from cable providers

²⁰ See Michael E. Porter, *COMPETITIVE STRATEGY* (Free Press 1980); *Idem.*, *COMPETITIVE ADVANTAGE* (Free Press 1985).

²¹ The Commission indirectly acknowledged this reality in both the 2010 Open Internet Order and the 2015 Order, noting how hypothetical future violations of the Open Internet rules each order proposed could cause negative impact (sometimes referred to inaccurately as “externalities”) not just on consumers and direct competitors but on other ecosystem participants. See Federal Communications Commission, *In re Preserving the Open Internet; Broadband Industry Practices*, Report and Order, 25 F.C.C.R. 17905 (Dec. 21, 2010) (hereinafter “2010 Order”) at ¶¶ 20-34; 2015 Order at ¶¶ 78-84.

²² To get Apple to manufacture the iPhone for its network, Sprint committed to buy \$20 billion worth of the devices, or 30.5 million units over four years. At the time, Sprint’s total market capitalization was only \$13 billion. Ben Parr, *Sprint Makes a Risky \$20 Billion Bet on the iPhone*, Mashable, Oct. 3, 2011, available at <http://mashable.com/2011/10/03/sprint-20-billion-iphone/#W02k9BEF4Sq8>.

as well as new entrants) products, likewise, pose an increased threat as a substitute to traditional cellular service.²³

In ecosystems experiencing sustained disruptive innovation, as these examples suggest, better and cheaper technology can act as an independent competitive force, forcing rapid price and other innovation from all participants, often in unexpected and unpredictable ways.²⁴ That is, when they are left to compete on equal terms, regulated, it at all, by technology-neutral rules.²⁵ The imposition of Title II rules, with the dangling risk of forbearance changes always looming, has dramatically and needlessly suppressed that dynamic, causing more harm to consumers than any theoretical gain from future enforcement of the Open Internet rules whose passage the 2015 Order believed required reclassification.

3. Invited increased rent-seeking behavior – Reclassification signaled to the ecosystem that one participant was not only subject to significant restrictions but, through forbearance, the possibility of price regulations and other expanded public utility treatment at the discretion of an increasingly politicized regulator. Consistent with a long history, both

²³ Similar examples of buyers, suppliers, new entrants and substitutes exerting substantial if not overwhelming market discipline is visible in many other markets over which the FCC maintains oversight, including business data services, multi-channel video programming distribution, over-the-air radio and television, analog voice and data, data transit and interconnection. See Federal Communications Commission, *In the Matter of Business Data Services in an Internet Protocol Environment, Technology Transitions, Special Access for Price Cap Local Exchange Carriers AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, Report and Order, WC Docket No. 16-143, GN Docket No. 13-5, WC Docket No. 05-25, RM-10593, April 28, 2017, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-17-43A1.pdf; Federal Communications Commission, *In the Matter of Promoting Innovation and Competition in the Provision of Multichannel Video Programming Distribution Services*, MB Docket No. 14-261, Notice of Proposed Rulemaking, December 19, 2014, available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-210A1.pdf.

²⁴ See Downes and Mui, UNLEASHING THE KILLER APP, *supra* note 11 at 64-69.

²⁵ The Department of Justice notably recognized the potential competitive power of technological innovation itself in its decision not to contest the merger of satellite radio providers XM Satellite Radio and Sirius Satellite Radio. See *Statement of the Department of Justice Antitrust Division on its Decision to Close its Investigation of XM Satellite Radio Holdings Inc.'s Merger with Sirius Satellite Radio Inc.*, March 24, 2008, available at https://www.justice.gov/archive/opa/pr/2008/March/08_at_226.html (“Finally, the likely evolution of technology in the future, including the expected introduction in the next several years of mobile broadband Internet devices, made it even more unlikely that the transaction would harm consumers in the longer term.”). See also Eisenach, *Broadband Competition in the Internet Ecosystem*, *supra* note 8.

within²⁶ and outside the FCC, reclassification invited rent-seeking behavior by other ecosystem participants, who rationally calculated that their ability to achieve competitive advantage from Commission action was a more efficient approach than through market competition.

Naked rent-seeking was clearly visible in the debate over data collection and use rules noted above. Dominant advertisers, directly and through proxy organizations, hypocritically urged the FCC to apply more restrictive rules to BIAS providers than those that apply to them.²⁷ Doing so ensured BIAS providers would remain a minor threat in the advertising market, without the need for competitive market responses including price reductions and continued investment in innovation.

Even before Title II reclassification was complete, heavy users of Internet interconnection services lobbied the FCC to include price regulation for transit as part of the 2015 Order. Netflix, whose OTT video traffic exceeds a third of all Internet packets at peak times, specifically asked the FCC mandate that BIAS providers add however many ports at however many locations Netflix demanded, at no charge, setting the price for interconnection at zero. (It was not clear if the company expected the same regulation to apply universally, or just for itself.)²⁸ When the FCC declined to extend Title II treatment to interconnection, Netflix's ardor for the Open Internet quickly dissipated, making clear its true motive.²⁹

²⁶ See, generally, Thomas Winslow Hazlett, *THE POLITICAL SPECTRUM* (Yale University Press 2017).

²⁷ See, e.g., *In the Matter of Protecting the Privacy of Customers of Broadband and Other Telecommunications Services*, WC Docket No. 16-106, COMMENTS OF THE INTERNET ASSOCIATION, May 27, 2016, available at <https://cdn1.internetassociation.org/wp-content/uploads/2016/05/Internet-Association-Comment-on-FCC-222-NPRM-052716.pdf>.

²⁸ *In the Matter of Protecting and Promoting the Open Internet Framework for Broadband Internet Services*, GN Docket No. 14-28, GN Docket No. 10-127, COMMENTS OF NETFLIX, INC., July 15, 2014, available at <https://ecfsapi.fcc.gov/file/7521491186.pdf>.

²⁹ See Larry Downes, *How Netflix Poisoned the Net Neutrality Debate*, FORBES, Nov. 25, 2014, available at <https://www.forbes.com/sites/larrydownes/2014/11/25/how-netflix-poisoned-the-net-neutrality-debate/#682ec5f21c4d>; Larry Downes, *Netflix Still Can't Make up its Mind About Net Neutrality*, FORBES, April 17, 2015, available at <https://www.forbes.com/sites/larrydownes/2015/04/17/netflix-still-cant-make-up-its-mind->

[about-net-neutrality/#3c38c58b6f70](https://www.forbes.com/sites/larrydownes/2016/03/28/say-it-aint-so-netflix-but-it-is-still-more-net-neutrality-hypocrisy/#3c38c58b6f70); Larry Downes, *Say it Ain't So, Netflix (Oh, But it is): More 'Net Neutrality' Hypocrisy*, FORBES, March 28, 2016, available at <https://www.forbes.com/sites/larrydownes/2016/03/28/say-it-aint-so-netflix-but-it-is-still-more-net-neutrality-hypocrisy/#3ad8819f427a>. In addition to repeated waffling on whether zero rating, which the company participates in extensively, offends Open Internet principles, Netflix also takes full advantage of non-neutral network management technologies, including a proprietary Content Delivery Network the company has withheld from competing video services and BIAS providers who don't sufficiently support the company's business strategy. See Larry Downes, *The Strange Resurrection of Net Neutrality*, CNET NEWS, Jan. 24, 2013, available at <https://www.cnet.com/news/the-strange-resurrection-of-net-neutrality/>.

III. Utility treatment for BIAS is fundamentally at odds with disruptive innovation

Broadband infrastructure has become critical to business and consumers alike as a leading source of economic growth and productivity. But the legal designation of a “public utility” is more than just an acknowledgment of that importance. For over a century, economists have long cautioned that treating infrastructure as a quasi-public monopoly should only be considered a last resort to overcome severe market failings.³⁰

That’s because utility treatment comes at a high cost. A regulated monopoly or municipal utility, by definition, doesn’t compete with anyone, eliminating incentives for investment, innovation, customer service, and maintenance. The sad state of most U.S. power, water, and mass transit systems painfully illustrates that point. The American Society of Civil Engineer’s most recent “report card” gives an overall grade of D+ for U.S. public and utility infrastructure, requiring trillions of dollars just to get, as the Washington, D.C. Metro system puts it, “back to good.”³¹

By comparison, private investors have spent nearly \$1.5 trillion on competing wired and mobile broadband networks over the last 20 years, and are poised to accelerate their efforts if the utility classification is undone.³² Though consumers in areas with significantly low population density may not yet have the fastest speeds, and contrary to what utility advocates claim, U.S. broadband deployment and pricing is the envy of much of the rest of the world.³³

Still, even if the structure of the broadband industry is more similar to a power company than a local grocer, the decision to impose public-utility regulation is far from obvious — or benign.

³⁰ See Paul J. Garfield and Wallace F. Lovejoy, *PUBLIC UTILITY ECONOMICS* (Prentice-Hall 1964).

³¹ See American Society of Civil Engineers, 2017 Infrastructure Report Card, *available at* <http://www.infrastructurereportcard.org/>; D.C. Metro, *Metro’s Plan to Get Back2Good*, Nov. 30, 2016, *available at* https://www.wmata.com/about/news/20161130_BacktoGood_Press_Release.cfm (“Getting back to good means running trains safely and on time.”)

³² Larry Downes, *U.S. Digital Infrastructure Needs More Private Investment*, *HARVARD BUSINESS REVIEW*, Oct. 14, 2016, *available at* <https://hbr.org/2016/10/u-s-digital-infrastructure-needs-more-private-investment>.

³³ Larry Downes, *How to Understand the EU-U.S. Digital Divide*, *HARVARD BUSINESS REVIEW*, October 19, 2015, *available at* <https://hbr.org/2015/10/how-to-understand-the-eu-u-s-digital-divide>.

Historically, the costs of utility treatment have proved notoriously high, increasingly exceeding their benefits even for traditional infrastructure. Consider just a few of the drawbacks:

- **Public utilities don't compete.** Utilities are regulated as monopolies, even if they are not. Any benefits consumers and businesses have realized from competition among broadband-access providers will quickly disappear. And those benefits have been substantial. During the 20 years in which U.S. Internet infrastructure was left largely to engineering-driven self-governance, private investment gave the United States four times as many wired connections as any other country, along with the most advanced mobile networks and fiber to nearly 25% of all residences.³⁴ More U.S. homes have access to broadband than have indoor plumbing. And except for the very newest high-speed services, U.S. broadband prices are actually lower than they are in price-regulated Europe. Wholesale and retail prices for nearly all services have fallen, in some cases by an order of magnitude or more.³⁵
- **Public utilities don't innovate.** Regulated utilities have no financial incentive to embrace change. As fossil fuels become unsustainable, for example, disruption is now essential in sleepy power utilities. But providers often can't legally invest in alternative energy sources even if their regulated management wanted to, which they don't. Utilities see increasingly efficient solar power not as a potentially better and cheaper solution but rather as an "existential threat," the beginning, according to the trade group Edison Electric Institute, of "a death spiral" for its members. As environmentalist Bill McKibben puts it, "Whereas most enterprises are about risk, utilities are about safety. Safe power supply, safe dividends. No surprises."³⁶

³⁴ *Id.* ("Overall, according to the OECD, the U.S. had 100 million wired broadband connections at the end of 2014, almost four times that of second-place Japan.")

³⁵ *Supra* note 9.

³⁶ Bill McKibben, *Power to the People*, THE NEW YORKER, June 29, 2015, available at <http://www.newyorker.com/magazine/2015/06/29/power-to-the-people>.

Supporters of the 2015 Order need only have reviewed the recent history of the communications industry itself to see the mismatch between the Internet and a public utility. As the computing revolution exploded elsewhere, basic telephone service, regulated under the same Title II that the 2015 Order imposed on BIAS providers, limped along for decades, with high (regulated) prices and poor (regulated) service. Phone calls were individually metered and expensive. Even after partial deregulation following the 1982 breakup of the bell system, simple information services, including caller ID and call forwarding, took decades to win federal and state approval.³⁷

Still unable to respond quickly if at all to the better and cheaper networking technology of the Internet, what's left of the analog phone network is now wheezing into extinction, with as many as 80 percent of U.S. households having already cut the cord in favor of mobile phones and Internet-based alternatives.³⁸

³⁷ Larry Downes, *Why Treating the Internet as a Public Utility is Bad for Consumers*, supra note 13.

³⁸ Larry Downes, *The End of the Line for the Analog Phone Network*, HARVARD BUSINESS REVIEW, March 28, 2014, available at <https://hbr.org/2014/03/the-end-of-the-line-for-the-analog-phone-network>.

IV. The 2015 Order dangerously and needlessly skews critical future innovations

By placing substantial and unbalanced regulatory requirements on only one sector of the Internet ecosystem, the 2015 Order, despite protestations of improving the environment for broadband competition, did precisely the opposite. The combination of public utility classification generally, the looming uncertainty over forbearance from some sections of Title II, and the arbitrary application of the General Conduct Rule, greatly diminished both the incentive and ability of BIAS providers to compete in the highly dynamic Internet ecosystem. Increased competition among providers, as well as intermodal competition between wired and wireless, were both made considerably less likely.

The entirely predictable response of BIAS providers and their partners has been depressed incentives to invest in disruptive innovations essential to improve the speed, coverage, and quality of broadband infrastructure. These disincentives impact two critical areas:

- **Network management technologies** – As the FCC noted in the 2010 Order, “neutral” packet transit has long been a tradition more honored in the breach.³⁹ To ensure efficient delivery of the most requested content, and voice, video and other traffic susceptible to latency, participants in the Internet ecosystem have developed a wide range of network management technologies that improve the user experience. These include the widespread use of content delivery networks, co-located servers, specialized services that travel on the public internet, virtual private networks, and anti-malware technology that blocks dangerous or illegal traffic.

Though the 2010 Order explicitly exempted these and a dozen other common-sense but non-neutral technologies and practices, the 2015 Order failed to reiterate these

³⁹ I detailed sixteen specific exemptions for non-neutral but necessary network management practices acknowledged by the Commission at the time of the 2010 Order. Larry Downes, *Unscrambling the FCC's Net Neutrality Order: Preserving the Open Internet, but Which One?* 20 COMM LAW CONSPECTUS 83, 111-116 (2011).

exemptions with the same clarity or conviction.⁴⁰ In addition, the last-minute addition of a General Conduct Rule introduced substantial doubt as to whether any approved network management technology would remain so, or under what circumstances the FCC might later change its mind.⁴¹

The skeptical investigation of zero-rating, for example, made clear that the Commission was serious about using its public utility powers to police future network management techniques under fluid criteria divorced from the bright-line rules or established principles of antitrust and anti-competition law. The net result has been to substantially discourage continued development and deployment of new network management techniques, despite continued need for more efficient traffic optimization as Internet packet volume continues to expand exponentially.

The 2015 Order's technology-specific regime also leaves BIAS providers at a distinct competitive disadvantage in developing and deploying future network management techniques relative to non-BIAS ecosystem participants. The definition of BIAS largely limits its vague scrutiny of network management techniques to "last mile" broadband providers.⁴²

The 2015 Order's message was clear, if irrational: Open Internet rules apply only to behavior of one participant in the Internet ecosystem; the rest are free to continue innovating and reaping the benefits of doing so, even when deploying non-neutral technologies within the network. The result will be skewed investment and sub-optimal engineering decisions for future network management innovations, based on legal categories rather than technical realities.

⁴⁰ 2015 Order at ¶¶ 25-35, 186-206.

⁴¹ Even some strong advocates for Title II reclassification recoiled from the General Conduct Rule. See Corynne McSherry, *Dear FCC: Rethink the Vague 'General Conduct' Rule*, Electronic Frontier Foundation, Feb. 24, 2015, available at <https://www.eff.org/deeplinks/2015/02/dear-fcc-rethink-those-vague-general-conduct-rules>.

⁴² 2015 Order at ¶¶ 25-31.

Current non-BIAS providers of acknowledged non-neutral technologies, including private and public CDN, VPN and other cloud-based services, for example, are not currently subject to the 2015 Order.⁴³ These providers are better-positioned to develop the next generation of network management hardware and software.

Given the arbitrary distinction of who is and is not subject to the 2015 Order, moreover, third-party hardware and software developers are now strongly motivated to push network management tools as far away from BIAS equipment and last-mile networks as possible, even when doing so is not necessarily the soundest engineering decision or the most efficient solution.

In discouraging BIAS providers and their direct suppliers from improving existing traffic patterns, the 2015 Order also erects unnecessary regulatory obstacles to handling emerging applications including the Internet of Things, ultra-high-definition video, autonomous vehicles and smart infrastructure, and augmented/virtual reality, to name just a few.

Some of these applications will require extremely low latency, while others will generate massive volumes of new data but which will operate at a low priority. In the absence of new network management technologies suited to these services, investment and deployment will be delayed, or worse. The entire Internet ecosystem will suffer.

⁴³ The solution is not to extend public utility treatment to other ecosystem participants—an option the 2015 Order left open in its redefinition of the Public Switched Network to include any “service” that uses “public IP addresses.” 2015 Order at ¶ 391. See Larry Downes, *On Net Neutrality, Six Ways the FCC’s Public Utility Order Will Lose in Court*, FORBES, April 8, 2015, available at <https://www.forbes.com/sites/larrydownes/2015/04/08/on-net-neutrality-six-ways-the-fccs-public-utility-order-will-lose-in-court/#43ad3c685752>.

- **Next generation networks** – Both wired and wireless networks continue to undergo dramatic transformation, requiring private investment that regularly tops amounts for any other industry.⁴⁴ Beyond the general disincentive for investment that comes with public utility treatment and the uncertainty of future forbearance decisions, however, Title II classification for BIAS and the General Conduct Rule are simply incompatible with the architecture of next generation broadband services, especially 5G mobile networks.⁴⁵

Following in the tradition of earlier non-neutral but essential network management technologies, several aspects of 5G design inherently and by necessity do not treat all packets the same. Priorities will be carefully managed between different types of network activities as expected uses expand to a wide range of new applications. The most frequently-used content will automatically replicate and migrate to equipment closer to users for faster delivery.

With the Internet of Things, communication of very small amounts of information from billions of devices will take place at lower frequencies, while millimeter wave frequencies will be employed for massive capacity and speed needed by high-definition video and real-time virtual reality. Some autonomous vehicle and smart infrastructure applications will require extremely low latency. To support the varied needs of different users and devices, network software will constantly redefine the physical network into multiple virtual networks in a technique known as “network slicing.”⁴⁶

⁴⁴ Michelle Di Iorio and Michael Mandel, *Investment Heroes 2016: Fighting Short-Termism*, Progressive Policy Institute, Oct. 2016, available at <http://www.progressivepolicy.org/publications/investment-heroes-2016-fighting-short-termism/>.

⁴⁵ See Larry Downes, *What is 5G and Why Should Lawmakers Care?* THE WASHINGTON POST, Oct. 26, 2015, available at https://www.washingtonpost.com/news/innovations/wp/2015/10/26/what-is-5g-and-why-should-lawmakers-care/?utm_term=.479058bfd60.

⁴⁶ Juan Pedro Tomas, *SK Telecom, Ericsson demo 5G network slicing technology*, RCR WIRELESS NEWS, Oct. 22, 2015, available at <http://www.rcrwireless.com/20151022/carriers/5g-network-slicing-demo-by-sk-telecom-ericsson-tag23>.

As this brief overview suggests, emerging 5G standards represent a fundamental rearchitecting of core Internet standards, effectively remaking the Internet to be natively mobile. As part of the Future Internet Architecture project, for example, all Internet content will be addressable independently of the server on which it was originally hosted.⁴⁷ That new architecture will allow natively mobile 5G networks to operate at vastly higher speeds with better security and greatly reduced complexity.

A fully-implemented 5G network architecture, absent permission from the FCC, could easily run afoul of many aspects of the 2015 Order. Much of the new 5G architecture at both the core and the edges of the network (a distinction, if it was ever meaningful, that will soon disappear) will prioritize traffic that demands low latency, and maintain persistent content throughout multiple virtual networks in what might be seen by non-engineers as faster and slower “lanes” of data traffic.

None of these design principles were explicitly discussed in the 2015 Order, and, to date, the FCC has yet to initiate any investigation or adjudicate any complaint regarding 5G. Even so, early invocation of the General Conduct Rule elsewhere is likely to leave 5G developers uncertain at best, needlessly slowing down technical development and deployment.

Removing that uncertainty is crucial for U.S. competitiveness. The U.S.’s dominant lead in 4G LTE networking has spurred intense competition in the race to 5G.⁴⁸ Other countries and regional economies, determined to avoid past mistakes, are spending massive public funds on early 5G experiments. As former White House technology advisor Jim

⁴⁷ National Science Foundation, NSF FUTURE INTERNET ARCHITECTURE PROJECT, available at <http://www.nets-fia.net/>.

⁴⁸ Deloitte, *How Policy Actions Could Enhance or Imperil America’s Mobile Broadband Competitiveness*, Sept. 2014, available at <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-mobile-index-09262014.pdf>.

Kohlenberger wrote, “Global economic rivals have already left the starting gate in this next innovation race. The United States must move quickly and decisively to pull ahead.”⁴⁹

⁴⁹ Jim Kohlenberger, *Mobilizing America: Accelerating Next Generation Wireless Opportunities Everywhere*, Mobile Future, Sept. 2015, available at <http://mobilefuture.org/wp-content/uploads/2015/09/5G-Paper-1.pdf>.

V. “Permissionless” innovation has been replaced with pre-emptive regulation

In the fierce competition experienced by all technology-based products and services, any delay in product launch can prove disastrous to entrepreneurs. Disruptive innovation requires unfettered access to markets, where better and cheaper innovations vie for customer adoption in an early stage of extensive, low-cost experimentation. New applications enter and exit the market at will, until the right combination of technologies and business model come together to create a market-winning solution—a Big Bang Disruption.⁵⁰

The 2015 Order restricts BIAS providers from participating in that process in several key respects. First, as noted, BIAS providers are arbitrarily limited in the kinds of future networking technologies they may offer, as well as in the architecture of next generation networks they are already preparing to deploy.

Consistent with public utility regulation generally, the 2015 Order revoked a twenty-year tradition of allowing BIAS providers to test new technologies in the market without pre-approval from regulators. This approach, which Adam Thierer has referred to as “permissionless innovation,” has been central to the success of disruptive innovation throughout the Internet ecosystem, and in particular to U.S. competitiveness relative to other economies.⁵¹

Under Title II, permissionless innovation is no longer an option for BIAS providers. The 2015 Order further restricts BIAS providers by subjecting them to the General Conduct rule, introducing both delay and uncertainty to the introduction of new products and services—limits that are fatal to disruptive innovation.

⁵⁰ Downes and Nunes, Big Bang Disruption, supra note 6 at 107-142.

⁵¹ Adam Thierer, PERMISSIONLESS INNOVATION (Mercatus 2016), available at <http://permissionlessinnovation.org/>. See also Larry Downes, *Managing the Big Bang: The Regulator’s Dilemma*, DEMOCRACY #34, (Fall, 2014), available at <http://democracyjournal.org/magazine/34/managing-the-big-bang-the-regulators-dilemma/>.

The “no-unreasonable interference/disadvantage standard” embodied in the General Conduct Rule, in particular, introduces considerable uncertainty for future product and service innovations by BIAS providers. Indeed, the Commission adopted it based on a belief that “there may exist other current or future practices that cause the type of harms our rules are intended to address.”⁵² In other words, the General Conduct Rule explicitly prohibits behavior that is undefined, speculative, and forward looking. It could, in theory, cover any practice, present or future, that a future FCC believes cause the “type of harms” its other bright-line Open Internet rules “are intended to address.”

The Commission acknowledged the potential harm a “standard” so vague could cause, but failed to provide safeguards to protect against it. The 2015 Order’s explanation for how the General Conduct Rule would be enforced is worth quoting in full:

We adopt our tentative conclusion to follow a case-by-case approach, considering the totality of the circumstances, when analyzing whether conduct satisfies the no unreasonable interference/disadvantage standard to protect the open Internet. Below we discuss a non-exhaustive list of factors we will use to assess such practices. In adopting this standard, we enable flexibility in business arrangements and ensure that innovation in broadband and edge provider business models is not unduly curtailed. We are mindful that vague or unclear regulatory requirements could stymie rather than encourage innovation, and find that this approach combined with the factors set out below will provide sufficient certainty and guidance to consumers, broadband providers, and edge providers—particularly smaller entities that might lack experience dealing with broadband providers—while also allowing parties flexibility in developing new services. We note that in addition to the following list, there may be other considerations relevant to determining whether a particular practice violates the no unreasonable interference/disadvantage standard. This approach of adopting a rule of general conduct, followed by guidance as to how to apply it on a case-by-case basis, is not novel. The Commission took a similar approach in 2010 when it adopted the “no unreasonable discrimination” rule, which was followed by a discussion of four factors (end-user control, use-agnostic discrimination, standard practices, and transparency). Indeed, for this new rule, we are providing at least as much guidance, if not more, as we did in 2010 for the application of the no unreasonable discrimination rule.⁵³

⁵² 2015 Order at ¶ 135.

⁵³ Id. at ¶ 138.

Several phrases stand out in this description: “Tentative” conclusions, “totality of the circumstances,” “non-exhaustive list of factors,” “may be other considerations relevant to determining.” This is language anathema to permissionless innovation; the certain death of disruptive innovation for BIAS providers.

Though the Commission assures that it is “mindful” of the risk that “vague or unclear regulatory requirements could stymie rather than encourage innovation,” it nonetheless believes its “non-exhaustive list of factors” will provide “sufficient certainty and guidance.” In support of that belief, the Order proceeds to describe seven “non-exhaustive factors” that will apply to the Commission’s review of practices accused of violating the General Conduct Rule.⁵⁴

Taken together, however, the description of these factors, which include “competitive effects,” “consumer protection” and “free expression,” leaves BIAS providers with less, rather than more, clarity. That reality, as noted, was borne out by the Commission’s first investigation under authority of the 2015 Order, a meandering fishing expedition reviewing the general practice of “zero-rating” and, at the time of the investigation’s termination, several specific programs being offered by BIAS providers and their non-BIAS content partners.

Perhaps in recognition of the inherent harm to innovation of the General Conduct Rule, the 2015 Order offered another solution for BIAS providers hoping to continue developing their products and services in a market that requires certainty and speed. With a goal of providing additional “legal certainty,” the 2015 Order enacted additional rules allowing BIAS providers to seek “advisory opinions” from the Enforcement Bureau as to whether “prospective” or “planned” activities (but not current practices) may or may not violate the new Open Internet rules.⁵⁵

⁵⁴ Id. at ¶¶ 139-145.

⁵⁵ Id. at ¶¶ 229-239.

Even a cursory reading of the advisory opinion rules makes clear that any potentially positive offset to slowed or forgone innovation is purely illusory. For one thing, such opinions, as the name makes explicit, are non-binding, “without prejudice to the Enforcement Bureau’s ability to reconsider the questions involved, or to rescind or revoke the opinion.”⁵⁶ The Bureau, moreover, is under no obligation to issue an opinion.⁵⁷ And though the Commission recognizes that “if the advisory opinion process is not timely, it will be less valuable to interested parties,” it nonetheless refuses to commit to any schedule at all, let alone an expedited process.⁵⁸

Perhaps most counter-productive, however, the 2015 Order requires those seeking advisory opinions to include “all material information sufficient for Commission staff to make a determination on the proposed conduct,” with the potential that staff will, at their discretion, ask parties requesting opinions “as well as other parties that may have information relevant to the request or that may be impacted by the proposed conduct,” for additional information “that the staff deems necessary to respond to the request.”⁵⁹

Though the Order adopts procedures to seek protection for confidential information, there is no guarantee the Bureau will agree with those seeking advisory opinions as to what constitutes confidential information. Any difference of opinion could be significant, since advisory opinions, “and any associated materials,” are made available to the public.⁶⁰

It should be obvious from these and other limitations that the 2015 Order’s offer of “advisory opinions” takes BIAS providers as far from the requirements of disruptive innovation as possible. Before even launching an experiment, a prudent BIAS provider is encouraged to apply for permission to the FCC’s enforcement bureau, disclosing precisely the innovative product or service that is to be tested.

⁵⁶ Id. at ¶ 235.

⁵⁷ Id. at ¶ 231.

⁵⁸ Id. at ¶ 234.

⁵⁹ Id. at ¶ 233.

⁶⁰ Id. at ¶ 234.

Competitors throughout the Internet ecosystem are not only alerted to the arrival of an impending disruptor, they are provided all the details needed to duplicate or neutralize the innovation at the usual speed of Internet entrepreneurs.

Meanwhile, the BIAS provider must wait patiently for a response that may come sooner, later, or not at all. Even if the BIAS provider eventually gets permission, it is not in any case, binding on the FCC should the Enforcement Bureau decide to investigate a future complaint (perhaps filed by a competitor or its proxies simply to further slow down the BIAS provider) or launch an investigation of its own sometime in the future.

BIAS providers, in short, gain nothing from requesting an advisory opinion, other than to alert the Enforcement Bureau of their own doubts about whether its prospective conduct may violate vague rules that apply uniquely to them.

VI. Conclusion

As the Commission correctly if depressingly observes in the 2017 NPRM:

The Commission's decision to reclassify broadband Internet access service as a telecommunications service subject to Title II regulation has resulted in negative consequences for American consumers—including depressed broadband investment and reduced innovation because of increased regulatory burdens and regulatory uncertainty stemming from the rules adopted under Title II.⁶¹

By correcting the 2015 Order's cardinal error, the FCC can restore regulatory equilibrium to the dynamic Internet ecosystem based on the technology-neutral, pro-innovation approach prescribed by the 1996 Act. Undoing reclassification will once again permit maximum innovation with the lowest possible risk of unintended consequences from well-intentioned but inherently slower and costly regulatory interventions.

In addition, undoing reclassification will restore the jurisdiction of the Federal Trade Commission, which actively and successfully policed the Open Internet until the 2015 Order cut it out of the picture.⁶² Congress, likewise, may be nudged into passing legislation that places Open Internet principles on firmer legal ground.⁶³

By recognizing the inherently dynamic and disruptive nature of competition and innovation in the Internet ecosystem, the FCC will once again embrace the wise practice of what Acting FTC

⁶¹ 2017 NPRM at ¶ 44.

⁶² Larry Downes, *Pushing the Net Neutrality Rock Back up the Hill*, FORBES, May 17, 2017, available at <https://www.forbes.com/sites/larrydownes/2017/05/17/pushing-the-net-neutrality-rock-back-up-the-hill/#4d057c3a3fe8>.

⁶³ Larry Downes, *The True Fate of Net Neutrality in a Trump FCC*, FORBES, Nov. 15, 2016, available at <https://www.forbes.com/sites/larrydownes/2016/11/15/the-true-fate-of-net-neutrality-in-a-trump-fcc/#3c3e06b4f705>.

Chairman Maureen Ohlhausen calls “regulatory humility” -- to the distinct benefit of consumers.⁶⁴

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "L. Downes", is centered on the page.

Larry Downes
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⁶⁴ Maureen K. Ohlhausen, *Regulatory Humility in Practice*, Remarks before the American Enterprise Institute, April 1, 2015, available at https://www.ftc.gov/system/files/documents/public_statements/635811/150401aeihumilitypractice.pdf.