Managing Last-Mile Monopolists: Reevaluating Sharing Obligations for the Modern U.S. Wireline Broadband Market

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Introduction

The United States has become complacent in its connectivity. Over 24 million Americans do not have access to minimally-acceptable broadband speeds, and the vast majority of high-speed markets are controlled by local cable monopolies. Other developed nations have deployed future-proof, nationwide fiber networks as the United States has pursued a path of deregulation and seen wireline competition and deployment stagnate. This trend will not only widen the digital divide between Americans of different geographic areas and races, but it will also encumber the country's economic progress as peer nations speed ahead. Both the individual and collective prosperity of Americans depends on access to continually improving broadband services. Yet, if the long-term goals of the United States are so dependent on advanced wireline connectivity, then why have competition and deployment stalled?

The answer to this question is best explained by looking to history. The dominant position of modern incumbent wireline broadband providers—namely, local cable monopolies—closely mirrors the market power held by local exchange monopolies of the past. Absent government intervention, incumbent providers of a telecommunications network are able to exploit their atypical, natural monopoly position—insulated by network effects and economies of scale—to preclude competitive entry.

This anti-competitive dynamic in the local telephone market was so problematic that Congress enacted sweeping structural changes to the industry in the Telecommunications Act of 1996 ("the 1996 Act"), which centered around sharing obligations for incumbents. However, in 2005, while the broadband market was in its formative years, the Federal Communications Commission (FCC) reconsidered these sharing obligations in the context of wireline broadband internet access service (BIAS). Rather than look to history as a guide, the FCC optimistically, but naively, speculated about the competitive development of the broadband market and chose instead a path of deregulation.

With an eye towards remedying the stagnation in the broadband market and encouraging the widespread deployment of fiber, the following paper will examine the history and competitive effects of sharing obligations in the provision of last-mile connectivity. Part I will evaluate the current market for high-speed broadband in the United States with a specific focus on the deficiency in fiber deployment. Part II will review the development of competition—or lack thereof—in the local exchange from the invention of the telephone to the ultimate passage of the 1996 Act. Finally, Part III will reconsider the FCC's 2005 decision to not extend sharing obligations to wireline BIAS providers in light of the modern broadband market.

Discussion

I. Wireline Broadband Competition in the United States

The wireline broadband market in the United States has stagnated. Despite a backdrop of recent deregulation ostensibly designed to facilitate infrastructure investment, the reality remains that consumers have few, if any, choices for high-speed internet. Local cable monopolies provide 94 percent of all broadband subscriptions exceeding 100 Mbps—at least to those lucky enough to be connected.[1] Over 80 percent of rural census blocks are denied even the option to purchase such speeds, and 53 percent of all census blocks have no provider offering speeds above a meager 50 Mbps.[2] Even more starkly, under an antiquated understanding of what constitutes "high-speed," defined by the FCC as 25 Mbps download and 3 Mbps upload (25 Mbps/3 Mbps), over 24 million Americans still lack any choice of provider at all.[3]

The poor state of wireline broadband deployment becomes even more apparent when the United States is benchmarked against other developed nations—particularly those that have focused on the deployment of fiber networks. Where the United States has struggled to connect a fraction of its citizens to legacy, asymmetrical 25 Mbps/3 Mbps speeds, peer nations like Sweden, Japan, South Korea, and Singapore can offer symmetrical speeds at or exceeding 100 Mbps over fiber networks to the vast majority of their populations.[4]

Moreover, these next-generation fiber networks are functionally future-proof; they can be upgraded without the costly and intrusive process of digging them up from the ground.[5] As it currently stands, however, the latest government data projects that only 11 million of the total 126 million homes in the United States have fiber connections, and there is scant industry discussion about large-scale fiber-to-the-home (FTTH) deployment.[6] The following sections will examine the factors contributing to the United States' lackluster performance in fiber deployment.

A. The Market for Fiber Deployment

Under current regulatory and market conditions, the likelihood of widespread fiber deployment in the United States is low.[7] Despite the demonstrable benefits of a nationwide

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[1] Susan Crawford, *Fiber: The Coming Tech Revolution—And Why America Might Miss It*, Yale University Press, 38 (2018) (hereinafter "*Fiber*").

[2] *Id.* at 38-39.

[3] *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 17-199, 2018 Broadband Deployment Report, 33 FCC Rcd. 1660, ¶ 50 (2018).

[4] *Fiber* at 9.

[5] *Id.* (describing how the information-carrying capacity of a fiber network "can be almost infinitely upgraded without digging up the cable, merely by swapping out the electronics that encode and power the pulses of light that travel within its walls.").

[6] *Id.*

[7] *The Potential for Ubiquitous, Open Fiber-To-The-Premises in San Francisco*, CTC Technology & Energy, Fiber for San Francisco Initiative at 49 (Oct. 2017) (finding that a purely private FTTH deployment strategy will not meet the

fiber network, incumbent broadband providers have no competitive impetus to deploy and the absence of sharing requirements precludes new competitors from meaningfully entering the market—though not for their lack of trying. Thus, the narrative of fiber deployment in the United States follows two tracks.[8] The first involves limited spurts of fiber deployment by major corporations—namely, Verizon and Google—curbed early by pressure from Wall Street investors given the projects' capital-intensive nature.[9] The second involves disruptive competitors—the competitive local exchange carriers (CLECs)—relying on legacy sharing obligations to gain sufficient funding to deploy fiber networks of their own.[10] These narratives will be examined in turn.

Major Providers Lack Incentives. Verizon's well-intentioned, but short-lived attempt at widespread fiber deployment is illustrative of the market forces constraining major providers. In 2005, following the deregulation of the wireline broadband industry by the FCC, Verizon launched an ambitious plan to expand its customer base and service offerings by deploying FTTH.[11] To undertake this high-cost venture, Verizon secured a number of state-regulated rate increases and redirected funds mandated for improvements to the public switched telephone network (PSTN).[12] Despite both state and federal regulatory concessions, investors nevertheless believed the project was too capital-intensive and cut it short.[13] The immediate financial interest of shareholders outweighed any countervailing long-term interest in developing a FTTH network.[14]

In today's market, the same fear of shareholder reprisal exists. No major broadband provider—whether its network is composed of copper or coaxial cables—is willing to undertake the sizeable financial investment to upgrade to fiber while its effective monopoly over last-mile connectivity remains unchallenged.[15] In fact, by parsing the geographic and service markets amongst competing providers, local cable monopolies are now able to merely increase the price on their existing service to generate additional revenue.[16]

Moreover, even innovative competitors from outside the traditional telecommunications industry struggle to justify fiber deployment to investors. For instance, Google launched its

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goals of "open access and direct fiber connectivity to every home and business" in San Francisco, a densely-populated, affluent city).

[8] Jon Brodkin, *AT&T Gets DirecTV Merger Approval, Must Deploy Fiber to 12.5M Customers*, Ars Technica (July 24, 2015), https://arstechnica.com/information-technology/2015/07/att-gets-directv-merger-approval-must-deploy-fiber-to-12-5m-customers/. Note that the described two-track narrative intentionally omits AT&T's recent fiber deployment, as it was required as a condition of its merger with DirecTV.

[9] *Fiber* at 56.

[10] *See* Electronic Frontier Foundation Comments Regarding U.S. Telecom Petition for Forbearance, WC Docket 18-141 at 3 (Aug. 6, 2018) (hereinafter "EFF Comments").

[11] *Fiber* at 52.

[12] Bruce Kushnick, *The Great Verizon FiOS Ripoff*, HuffPost (Dec. 6, 2017), https://www.huffpost.com/entry/the-great-verizon-fios-ripoff_n_1529287.

[13] *Fiber* at 52.

[14] *Id.*

[15] *Id.* at 38.

[16] *Id.* at 54.

own fiber initiative in 2010 in an attempt to disrupt the broadband industry.[17] To provide for timely and efficient deployment, Google negotiated agreements with municipalities to ensure special access to utility poles.[18] However, incumbent providers—specifically, AT&T and Comcast—filed lawsuits to quash their new competitor, claiming that Google's agreements violated federal rules.[19] These fights proved to be a costly distraction for Google during what was already a cost-intensive venture.[20] The result: Google announced it was "pausing" its fiber deployment in 2016.[21]

Legacy Sharing Obligations. Aside from short-lived efforts by large corporations, the most prominent player in fiber deployment is the CLEC. Thanks to legacy unbundling requirements from the 1996 Act, CLECs may lease capacity on the facilities of incumbent local exchange carriers (ILECs).[22] This allows CLECs—without the prohibitive expensive of building their own network—to sell digital subscriber line (DSL) service over existing facilities to generate revenue and develop a customer base. Not only does this immediately inject competition—price, customer service, or otherwise—into the local broadband market, but it also allows CLECs to generate sufficient revenue to deploy FTTH networks of their own. Moreover, as CLECs increasingly deploy better, more advanced fiber networks, their incumbent peers are forced to take competitive action. Either the incumbent responds by building out a competing fiber network capable of offering the same speeds, or it risks losing customers to the superior fiber offering.

Incumbents cannot stand this competitive pressure. Their immense frustration with sharing obligations is perhaps best evidenced by the recent regulatory action of the trade group, USTelecom – The Broadband Association. This coalition of natural monopolists petitioned the FCC to forebear from the 1996 Act's local competition provisions requiring unbundled access to the transmission component of an incumbent's wireline facilities.[23] To justify such an argument in light of woefully inadequate broadband connectivity and competition, USTelecom sought to avoid the issue by directing attention towards voice subscriptions. In response, consumer advocates called attention to this misdirection, suggesting instead the FCC focus on "the far greater number of broadband subscribers and potential future CLEC customers" that forbearance would affect.[24]

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[17] Brian Fung, *Why Google Fiber Stopped Its Plans to Expand to More Cities*, Washington Post (Oct. 26, 2016), https://www.sacbee.com/news/nation-world/national/article110655177.html.

[18] *Id.*

[19] *Id.*

[20] Blair Levin & Larry Downes, *Why Google Fiber Is High-Speed Internet's Most Successful Failure*, Harvard Business Review (Sept. 7, 2018), https://hbr.org/2018/09/why-google-fiber-is-high-speed-internets-most-successful-failure.

[21] *Id.*

[22] *See* 45 U.S.C. § 251(c)(3); 45 U.S.C. § 252(d)(1).

[23] *See* Petition of USTelecom for Forbearance Pursuant to 47 U.S.C. § 160(c) to Accelerate Investment in Broadband and Next-Generation Networks, WC Docket 18-141 (May 4, 2018).

[24] EFF Comments at 3.

B. Broadband Mapping

These problems surrounding fiber deployment—as well as broadband competition more generally—have persisted in part due to fundamental flaws in the FCC's broadband mapping process. As currently conducted, the FCC requires facilities-based broadband providers to self-report their broadband coverage and speeds via Form 477 twice per year.[25] Despite the fact that providers are incentivized to over-report speeds and under-report coverage failures, the FCC does not audit the veracity of the data.[26] Moreover—and perhaps most crucially to any competitive analysis—the FCC refuses to make the pricing data provided available to the public.[27] Further critiques include the published information being outdated by as many as 18-months by the time it reaches policy conversations,[28] and that it lack any specification about the type of facility (*e.g.*, copper, cable, or fiber) over which the service is provided.[29] Since regulators are left unable to meaningfully assess the scope of the problem—or are perhaps able to rely on faulty data to suggest there is ample competition in the broadband market—little progress is made.

Moreover, in September 2018, the Government Accountability Office (GAO) published a report critical of the FCC's broadband maps, calling attention to the downstream consequences of its reporting deficiencies.[30] Specifically, the GAO's independent study had shown that the FCC has consistently overstated the availability of broadband on tribal lands.[31] It went on to document how this systematic over-reporting leads to less targeted funding to actually provision broadband service to these underserved areas, directly connecting the FCC's reporting failures to consumer harm in a historically marginalized population.[32]

II. Stagnation in the Local Exchange and the 1996 Act

The narrative of stagnant competition in a wireline telecommunications market is not a new one. For over a century, consumers were deprived of the benefits of meaningful competition in the provision of telephone service while AT&T leveraged its geographic monopolies and close relationship with federal regulators to protect its market dominance.[33] Only through targeted legislative action was Congress able to curb anti-competitive practices in the local exchange.[34] By imposing sharing obligations on incumbent providers, the 1996

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[25] Karl Bode, *How Bad Maps are Ruining American Broadband*, The Verge (Sept. 24, 2018), https://www.theverge.com/2018/9/24/17882842/us-internet-broadband-map-isp-fcc-wireless-competition (hereinafter "Bode, *Bad Maps*").

[26] *Id.*

[27] *Fiber* at 46.

[28] Bode, *Bad Maps*.

[29] *Fiber* at 46.

[30] *Broadband Internet: FCC's Data Overstate Access on Tribal Lands*, Government Accountability Office, Report to Congressional Requesters, GAO-18-630 (Sept. 2018).

[31] *Id.*

[32] *Id.*

[33] *See* infra Part II.A.

[34] *See* infra Part II.C.

Act immediately injected competition into a market long characterized by local monopolies.[35] The following will examine the history and development of competition in the local exchange, focusing on the competitive imperative of sharing obligations in wireline telecommunications markets.

A. Early Degradation of Competition in the Local Exchange (1894–1984)

From the earliest days of its nearly 150-year history, the Bell System[36] did not shy away from anti-competitive, anti-consumer practices in pursuit of long-term structural dominance. In 1894, promptly after Alexander Graham Bell's original patents expired, AT&T began cementing its monopolistic market position by refusing to interconnect its network with that of its competitors, despite the mutually beneficial nature of such an arrangement.[37] Accordingly, in the absence of interconnection agreements, inefficient competition arose in the form of duplicate telephone networks in major cities—one to talk with AT&T customers and another to talk with non-AT&T customers.[38] However, by the turn of the century, AT&T recognized the folly of this redundant competition and began to take action against it—not by implementing the competition-inducing interconnection measures but instead by establishing exclusive arrangements with once-competitors to reduce or eliminate head-to-head competition in the local exchange.[39]

While the refusal to interconnect hindered competition in these nascent telecommunications markets, AT&T's control over crucial long-distance patents and its proprietary customer premises equipment also played a role in precluding competition. In the context of long-distance markets, AT&T leveraged its patents to establish dominance nationwide and then refused interconnection to potential local competitors.[40] By preventing rivals from meaningfully offering both local and long-distance services, AT&T was able to offer a superior product to consumers—albeit almost certainly at a higher price—and greatly outpace any other telecommunications firm in building out its network.[41] While the Department of Justice (DOJ) ultimately mandated interconnection in an antitrust consent decree with AT&T in 1914 to address this exclusionary behavior in the long-distance market, the regulatory intervention came too late to mitigate the lasting structural harm.[42]

From 1913 until the late-1960s, AT&T maintained dominance in the customer premises equipment market under the guise of network safety by forbidding and aggressively litigating

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[35] *See* infra Part II.D.

[36] Note the "Bell System" includes AT&T (which provisioned local and long-distance services), Western Electric (which provided customer premises equipment), and Bell Telephone Laboratories (which conducted research and development on behalf of the Bell System). For the purpose of simplicity, the shorthand "AT&T" is used to refer to the collective Bell System prior to its break-up in 1984.

[37] Jerry Kang & Alan Butler, *Communications Law and Policy*, 262 (6th ed. 2018) (hereinafter "*Communications Law*").

[38] *Id.*

[39] *Id.*

[40] *Id.* at 263.

[41] *Id.*

[42] *Id.*

against the connection of "foreign devices" to the PSTN.[43] Regardless whether the proposed attachment provided significant utility to consumers or was entirely innocuous with regard to the network's security, AT&T fought to ensure that only Bell devices were allowed connection to the PSTN.[44] The quintessential example of this anti-competitive litigation involved AT&T's refusal to allow the "Hush-A-Phone," a cup-like device mounted on the Bell phone's mouthpiece to reduce the risk of being overheard, from being used in conjunction with its customer premises equipment.[45] "The FCC absurdly agreed with AT&T's submission that the use of such 'foreign devices' threatened the integrity of the telephone system, even though the practical effect of the device was equivalent to covering the receiver with one's hand."[46]

By the early 1970s, AT&T's scope and influence was staggering; not only had AT&T become the nation's sole provider of long-distance services, but it also controlled roughly 80 percent of the local exchange market.[47] In response to this apparent market failure and to address the concerns of new competitors, like MCI Telecommunications, the FCC gradually took steps to introduce competition into the long-distance market—first allowing more competition in private line services and later allowing for open competition with AT&T.[48] However, this regulatory intervention was not without a prolonged—albeit unsuccessful—legal challenge from AT&T.[49] The company's response to this legal defeat was to systematically and aggressively lower its prices in the long-distance markets now also served by newfound competitors, recouping the lost revenue by hiking up its prices in markets where it still maintained a monopoly.[50]

The DOJ took action to curb this flagrant anti-competitive behavior. In response to AT&T's predatory cross subsidization scheme, its discriminatory provision of access to the local exchange for long-distance competitors (referred to as "operational discrimination"), and its overly-restrictive customer premises equipment practices, the DOJ filed an antitrust action against AT&T in 1974.[51] The resulting Modified Final Judgement—implemented almost a decade after the lawsuit was filed—took aim at AT&T's anti-competitive conduct through a rarely invoked structural remedy: divestiture.[52] Regulators, conceding that the local exchange exhibited natural monopoly characteristics, sought to eliminate the bottleneck of control AT&T maintained at the local exchange by splitting the company into discrete

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[43] *Id.*

[44] Jonathan E. Nuechterlein & Philip J. Weiser, *Digital Crossroads: American Telecommunications Policy in the Internet Age*, 58 (2d ed. 2007) (hereinafter "*Digital Crossroads*").

[45] *See* Hush-A-Phone v. United States, 238 F.2d 266 (D.C. Cir. 1956).

[46] *Digital Crossroads* at 58.

[47] *Communications Law* at 263.

[48] *Id.* at 264.

[49] *See* MCI Telecommunications Corp. v. FCC, 561 F.2d 365 (D.C. Cir. 1977).

[50] *Communications Law* at 264.

[51] *Id.*

[52] *Id.*

entities—dividing control over the local exchange and long-distance markets.[53] The resulting companies included AT&T Long Lines, which provisioned long-distance services and was explicitly prohibited from entering the local exchange market, and seven Regional Bell Operating Companies (or "Baby Bells"), which provisioned local exchange service within defined regions and were explicitly prohibited from entering the long-distance market.[54]

B. Breaking Down the Baby Bells: Competitive Boom or Bust? (1984–1996)

While the break-up of AT&T temporarily alleviated concerns around predatory pricing and operational discrimination, the structural remedy failed to meaningfully introduce competition in the local exchange.[55] Indeed, the Modified Final Judgement explicitly approved of seven regional monopolies in the local exchange without a feasible mechanism for subsequently increasing competition.[56] As such, the threat of predatory cross subsidization where AT&T controlled vertically adjacent markets no longer existed, but the bottleneck in the local exchange nevertheless remained. Since the newly-formed Baby Bells had both an inherent ability and natural incentive to block competition, they did just that by provisioning access to their local exchanges in a technically-inferior manner and charging rates that exceeded cost.[57]

Competition with the Baby Bells arose, then, as a means to bypass the local exchange entirely. Competitive access providers (CAPs) were a new entity that competed in the provision of competitive access services, but not in the local exchange market itself.[58] Crucially, this type of competition was only able to exist because of the high-volume of business customers between major cities. By building high-capacity fiber "rings" underneath major cities to bypass the Baby Bell's local exchange, CAPs were thus able to enjoy economies of scale while only serving a small, but lucrative portion of the customer base in any given city.[59]

Although CAPs could bypass the local exchange in certain limited contexts, doing so often proved prohibitively expensive and interconnection was almost always more efficient. Thus, policy debates over local access competition centered around the terms on which CAPs could demand interconnection to the Baby Bell's local exchange when it was infeasible for them to build out their own last-mile network.[60] In response to this debate and in an incremental step towards local exchange competition, the FCC issued its *Expanded*

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[53] Glen O. Robinson, *The Titanic Remembered: AT&T and the Changing World of Telecommunications*, 5 Yale J. Reg. 517, 531-32 (1988).

[54] *Id.*

[55] *Digital Crossroads* at 63.

[56] John Pinheiro, *AT&T Divestiture & the Telecommunications Market*, 2 Berkeley Tech. L.J. 303, 316 (1987).

[57] *Digital Crossroads* at 65.

[58] Note the distinction between competition in *local access* markets compared to competition in *local exchange* markets. Local access competition exists when CAPs *bypass* some or all of the local exchange and serve high-volume business customers by connecting them directly to long-distance carriers. Conversely, local exchange competition exists when an individual user has a meaningful alternative to the incumbent local exchange carrier in placing local calls over the local exchange.

[59] *Digital Crossroads* at 65.

[60] *Id.* at 66.

Interconnection Orders in the early 1990s to allow CAPs to co-locate their own interconnection equipment in specially designated areas in the incumbent's local exchange.[61]

As debates over local exchange competition progressed, regulators by the mid-1990s began experimenting with policies designed to increase competition in the local *exchange* markets—not just local *access* markets. For instance, in New York and California, regulators implemented regulatory regimes where new entrants were allowed to "interconnect with the incumbent's network and lease capacity on its facilities at low wholesale rates to provide competing local exchange services."[62] This type of wholesale leasing arrangement formed the basis for the 1996 Act's subsequent introduction of unbundled network elements (UNEs).[63] Moreover, it is important to note that CAPs, which had previous experience in deploying and administering similar networks (*e.g.*, fiber "rings" around major cities), were among the first to enter these new markets.[64]

While the competitive effect of these early regulations was moderate—largely due to their limited applicability and scope—they nevertheless played a major role in informing the drafters of the 1996 Act. Their influence is best evidenced by the "local competition provisions" of Sections 251 and 252, which mirrored—albeit on a much larger scale—many of the attempted regulatory interventions.[65]

C. The Local Competition Provisions (1996)

The 1996 Act, the most comprehensive reform of federal telecommunications policy since the New Deal, was designed in essence to increase competition in the local exchange.[66] Regulators recognized that the fundamental economic characteristics of the wireline telecommunications industry—namely, network effects and economies of scale—in the absence of government intervention had incentivized and even rewarded anti-competitive behavior.[67] As a result, Congress granted new entrants expansive rights to interconnect their networks with those of the incumbents and to lease unbundled capacity on an incumbent's network, both at regulated rates.[68] The specific local competition provisions which enabled

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[61] *See Expanded Interconnection with local Telephone Company Facilities, Amendment of Part 69 Allocation of General Support Facility Cost*, Report, Order, and Notice of Proposed Rulemaking, 7 FCC Rcd. 7369 (1992); *Expanded Interconnection with Local Telephone Company Facilities, Amendment of Part 36 of the Commission's Rules and Establishment of a Joint Board*, Report, Order, and Notice of Proposed Rulemaking, 8 FCC Rcd. 7374 (1993).

[62] *Digital Crossroads* at 67.

[63] *Id.*

[64] *Id.* Note the similarity of CAPs in the mid-1990s to the current market position of CLECs, which have analogous prior experience in deploying and administering DSL services. As such, CLECs are similarly well-positioned to spur competition through shared access agreements with wireline BIAS providers.

[65] *Id.* at 68.

[66] *Id.* at 69.

[67] *Id.* at 75. Network effects exist where the value of a network (*e.g.*, a telephone system or a social media platform) increases with each additional user of the network. Economies of scale refer to reduced costs per unit that arise from increased total output of a product (*e.g.*, once a firm has built out a telephone system to a sufficient scale, the cost of providing service to each additional user will be substantially lower than for a firm which has a less-developed network or is a non-facilities-based competitor).

[68] *Id.*

these structural changes—interconnection, unbundled network elements, rate regulation, and resale—will be examined in turn.[69]

Interconnection. Designed specifically to mitigate network effects, Sections 251(c)(2) and 251(c)(6) allow new competitors to demand interconnection with the incumbent's network "at any technically feasible point," not just a location of the incumbent's choosing.[70] Moreover, these provisions grant new entrants the right to co-locate their own equipment at the incumbent's facilities.[71] As a practical matter, these provisions allowed "any competitor [to] rent space in an incumbent's central office; place its equipment there to interconnect with the incumbent's network; and purchase various related services, such as power and air conditioning, from the incumbent."[72] Moreover, Section 252(d)(1) allowed regulators to limit the rate a new competitor had to pay an incumbent for interconnection and housing the equipment.[73]

Unbundled Network Elements. In an effort to minimize the barrier to entry of economies of scale, Sections 251(c)(3) and 252(d)(1) granted new entrants a right to obtain "access to [the incumbent's] network elements on an unbundled basis;" that is, to lease capacity on the incumbent's network facilities at regulated cost-based rates.[74] "In this context, to say that network elements are available on 'an unbundled basis' is simply to say that the competitor may, if it wishes, lease them individually at separate rates or in combinations of its choosing."[75] While leasing is used as the shorthand for gaining access to UNEs, it is important to note this does not necessarily mean the competitor has access to the discrete physical facility. "Often, the competitor receives only *capacity* on such a facility, along with its 'features, functions, and capabilities.' For example, when a competitor leases 'dedicated transport' from an incumbent, it does not normally lease an entire fiber-optic strand; instead, it leases a fixed increment of capacity on that strand."[76]

Relatedly, Section 251(d)(2) directs the FCC to limit the network elements subject to unbundling under Section 251(c)(3) by "consider[ing], at a minimum, whether . . . the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer."[77] This is known as the impairment standard, which in practice tells the FCC to identify, at some level of generality, the elements that a competitor truly needs to compete.[78]

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[69] To minimize the use of acronyms, the following will refer to competitive local exchange carriers (CLECs) as new entrants or competitors and will refer to incumbent local exchange carriers (ILECs) as the incumbent.

[70] 45 U.S.C. § 251(c)(2).

[71] 45 U.S.C. § 251(c)(6).

[72] *Digital Crossroads* at 79.

[73] 45 U.S.C. § 251(d)(1).

[74] 45 U.S.C. § 251(c)(3); 45 U.S.C. § 252(d)(1).

[75] *Digital Crossroads* at 81.

[76] *Id.*

[77] 45 U.S.C. § 251(d)(2).

[78] *Digital Crossroads* at 81-82.

Rate Regulation. Pricing for UNEs is based on "total element long-run incremental cost," or TELRIC.[79] This pricing standard uses a forward-looking approach based on what it would cost a hypothetical "most-efficient" provider to build out today—not based on the network's design or what it actually cost the incumbent.[80] Although the FCC establishes the pricing methodology, specific disputes between incumbents and new competitors are resolved before individual state public utility commissions (PUCs).[81]

Despite an immediate legal challenge claiming the pricing scheme was unfair to incumbents,[82] interviews with members of the CLEC industry conducted during the course of preparing this paper reflect the opposite. In fact, although the cost to a hypothetical "most-efficient" provider should presumably decrease over time, one CLEC representative reported that an incumbent provider successfully petitioned the Oregon PUC to raise rates, attributing the price increase to the outsized legal and economic resources of the incumbents. Seven years after introducing TELRIC pricing, the FCC itself conceded its formulation was problematic; it expressed concern that "the excessively hypothetical nature of the TELRIC inquiry" had led to the creation of a "black box" from which a variety of rates could emerge.[83]

Resale. Another mechanism to mitigate economies of scale is contained in Section 251(c)(4), which permits a new entrant to sign up large numbers of local service customers by reselling an incumbent's "retail" services under its own brand name. In this manner, the new competitor can build brand recognition, develop a customer base, and then—when the economies of scale are great enough—serve its customers over facilities of its own. "To make resale a more plausible entry strategy, Congress entitled competitors to obtain, for resale, an incumbent's 'retail' services at retail rates *minus* the retail-specific costs (of marketing, billing, etc.) that the incumbent will 'avoid' by virtue of no longer providing retail service to the customers at issue."[84] Moreover, Section 252(d)(3) provides the framework for pricing these arrangements, referred to as "the avoided-cost discount."[85] As applied based on a 2000 Court of Appeals decision, however, the avoided-cost discount has proven insufficient to make resale viably generate competition.[86]

D. Implementation of Sharing Obligations (1996–2005)

Following the passage of the 1996 Act, there was significant debate around the respective roles of the FCC and state regulators in implementing the local competition

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[79] *Id.* at 83.

[80] *Id.*

[81] *Id* at 84.

[82] *See* Verizon Communications Inc. v. FCC, 535 U.S. 467 (2002).

[83] *Review of the Commission's Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers*, WC Docket No. 03-173, Notice of Proposed Rulemaking, 18 FCC Rcd. 20,265, ¶¶ 6-7 (2003).

[84] *Digital Crossroads* at 85.

[85] *Id.*

[86] *Id.*

provisions.[87] Ultimately, "the FCC establishes the basic rules governing the local competition matters, and state PUCs apply those rules in resolving specific carrier to carrier disputes."[88] The resolution of such disputes are governed by the procedural provisions of Section 252.[89]

Disputes between ILECs and CLECs typically stem from disagreement over interconnection agreements, which specify the key terms governing the shared access arrangement.[90] There are two possible paths these negotiations can follow. First, the two providers might resolve all relevant issues without regulatory intervention.[91] In that event, they file with the state PUC, which will approve the agreement so long as it does not harm third parties or otherwise threaten the public interest.[92]

Alternatively, the negotiations between the two parties will break down, either because "the parties disagree about what each side owes under the governing law or the other believes that it can achieve a more favorable outcome by taking the matter to litigation."[93] When this occurs, the state PUC arbitrates the disputed issues pursuant to the procedures articulated in Section 252 and the relevant provisions of the 1996 Act.[94] Either side may appeal the state PUC's order by filing in the relevant federal district court.[95]

Moreover, Section 252(i) requires a carrier to "make available any interconnection, service, or network element provided under an agreement approved under this section to which it is a party to any other requesting telecommunications carrier upon the same terms and conditions as those provided in the agreement."[96] Originally, the FCC interpreted this provision as allowing CLECs to pick-and-choose which provisions from incumbent's existing interconnection agreements were most advantageous to themselves.[97] Incumbents argued that this right of CLECs discouraged private negotiations as a meaningful alternative to arbitration.[98] As such, in 2004 the FCC eliminated the pick-and-choose rule in favor of an all-or-nothing rule, which requires a competitor "seeking to avail itself of terms in an interconnection agreement to adopt the agreement in its entirety," which the FCC believed would encourage better agreements through negotiation.[99]

III. The FCC Rejects Sharing Obligations for Wireline Broadband

Shortly after the implementation of sharing obligations in the local exchange, the FCC confronted a similar structural problem in the emerging wireline broadband industry. In

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[87] *Id.* at 86.
[88] *Id.*
[89] 45 U.S.C. § 252(i).
[90] *Digital Crossroads* at 86.
[91] *Id.*
[92] *Id.*
[93] *Id.* at 87.
[94] *Id.*
[95] *Id.*
[96] 45 U.S.C. § 252(i).
[97] *Digital Crossroads* at 87.
[98] *Id.*
[99] *Id.*

2005, the FCC was tasked with deciding whether the sharing obligations of the 1996 Act should carry forward and apply to wireline BIAS providers.[100] It recognized that the decision necessarily relied, in large part, on its "predictive judgment regarding a rapidly changing, dynamic industry," that did not have a single, clear-cut answer.[101]

However, the FCC's "predictive judgement" failed to recognize that the "dynamic" wireline broadband industry exhibited the same natural monopoly characteristics as the local exchange market of the past. As a result, federal regulators rejected sharing obligations for wireline BIAS providers, believing instead that competition would increase in a deregulated market and that a market-based incentive would lead to sharing in the absence of a mandate.[102] Moreover, the FCC concluded that any imposition of sharing requirements "would impede the development and deployment of innovative wireline broadband Internet access technologies and services."[103]

With the benefit of hindsight and an updated understanding of the future of broadband, it is evident that the FCC's concerns around sharing obligations in 2005 were overblown. In today's wireline market, the absence of sharing requirements—not their imposition—can function to impede deployment of advanced broadband technologies.[104] CLECs rely on legacy unbundling obligations from the 1996 Act to lease capacity on existing facilities to offer DSL service and then use this revenue to fund fiber deployment.[105] This creates competitive pressure for other providers to offer competing advanced services, resulting in increased fiber deployment and improved choices for consumers.[106]

Without similar sharing requirements for wireline BIAS providers, incumbent providers will reap the rewards their natural monopoly position affords with no incentive to improve networks beyond their current capacity, all while economies of scale prevent competitors from deploying a competing facilities-based network. The following will explore the legal and regulatory history leading up to the *2005 Wireline Broadband Order* and contextualize the FCC's justifications in light of modern telecommunications markets and the current state of fiber deployment.

A. Legal and Regulatory History (1966–2005)

From the late 1960s onward, as both telephone and cable providers began offering data services—each providing the same connection to the internet but operating under distinct regulatory regimes—the FCC was faced with the difficult task of delineating and governing the rapidly evolving landscape of internet network technology. The challenge of this undertaking is perhaps best evidenced by the length and complexity of the regulatory

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[100] *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities,* CC Docket No. 02-33, Report and Order, 20 FCC Rcd. 14853, ¶ 41 (2005) (hereinafter "*2005 Wireline Broadband Order*").

[101] *Id.* at ¶ 78.

[102] *Id.* at ¶ 64.

[103] *Id.* at ¶ 65.

[104] *See* EFF Comments at 3.

[105] *See* infra Part I.A.

[106] *Id.*

history; the FCC wrestled with industry groups and consumer advocates over classifications for nearly 40 years in a series of proceedings known as the *Computer Inquiries*.[107]

This culminated in early 2002, as telephone and cable providers began pressuring the FCC in an attempt to insulate themselves from sharing obligations and other provisions of the 1996 Act. Specifically, they sought to ensure that wireline BIAS was classified as an "information service," rather than a "telecommunications service," so that providers would fall under a more lenient regulatory regime without common carriage obligations.[108]

The FCC originally agreed, but a coalition of small providers—composed largely of CLECs—brought suit, arguing instead that the sharing requirements were necessary for the competitive health of local BIAS markets. The well-known case, titled *NCTA v. Brand X*, ultimately rose to the Supreme Court. Writing for a 6-3 majority, Justice Thomas held that the definitions of "information service" and "telecommunications service" within the 1996 Act were ambiguous and that the Court should defer to the judgement of the FCC regarding the interpretation of the terms.[109] Consequently, the FCC issued the *2005 Wireline Broadband Order* to articulate definitively—at least until a change in administration—that the classification for wireline BIAS was as an "information service."[110]

Another explanation for the FCC's deregulatory decision was the extent to which the telecommunications industry held the deployment of fiber networks over the heads of federal regulators to pressure for deregulation.[111] For instance, in June 2004, Ed Whitacre, the chairman of Southwestern Bell Company, the predecessor to today's AT&T, told the *Los Angeles Times* that his company planned to invest $6 billion in fiber-related upgrades once the regulatory environment became "more rational."[112] Professor Susan Crawford describes this as one of many "Lucy-with-the-football" moments of telecommunications history.[113] Though the political stunt resulted in the industry's desired rollback, it never resulted in the consumers' desired deployment of fiber.[114]

B. The FCC's Misguided Rationale (2005)

In classifying wireline BIAS as an "information service," the FCC based its decision on its mandate to encourage "the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans."[115] It weighed the competitive benefits of sharing obligations against the infrastructure investment harms pursuant to this obligation

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[107] *2005 Wireline Broadband Order* at ¶ 21.

[108] *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, GN Docket No. 00-185, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd. 4798, ¶ 42-47 (2002).

[109] *See* National Cable & Telecommunications Ass'n v. Brand X Internet Services, 545 U.S. 967 (2005).

[110] *2005 Wireline Broadband Order* at ¶ 8-9. Note also that "[w]ireline broadband Internet access service, for purposes of this proceeding, is a service that uses existing or future wireline facilities of the telephone network to provide subscribers with Internet access capabilities."

[111] *Fiber* at 51.

[112] *Id.*

[113] *Id.*

[114] *Id.*

[115] *2005 Wireline Broadband Order* at ¶ 3, n.8; 47 U.S.C. § 706.

and decided deregulation would be the best means to accomplish this end.[116] However, the FCC's assessment of the broadband market fell short in a number of key ways—namely, through erroneous predictions about the development of market incentives, inter- and intramodal competition, infrastructure investment, and market penetration. The following will evaluate these shortcomings in turn.

Market Incentives for Sharing. One justification for the FCC's deregulatory classification was that incumbent wireline BIAS providers would have market-based incentives to share in the absence of a mandate.[117] The rationale was primarily economic: "[t]he record makes clear that [cable operators] have a business interest in maximizing the traffic on their networks, as this enables them to spread fixed costs over a greater number of revenue-generating customers."[118]

Though this claim reads as economically plausible, the FCC could only identify two unsatisfying pieces of evidence to show this actually happened in practice: a statement from Comcast's 10-K Annual Report that "a number of cable operators" had engaged in wholesale agreements and the behavior of Time Warner following a consent decree with the Federal Trade Commission (FTC).[119] The former needs more corroboration, as it alone is insufficient to support the FCC's claim of widespread wholesale access in the absence of a mandate. The latter should be disregarded entirely, as it is the result of a legally-enforceable consent decree, not market forces. Perhaps the struggle to produce evidence is itself strong evidence that market forces will not lead incumbents to open up their networks to competitors in the absence of a legal requirement.

In its market analysis, the FCC acknowledged the difficulty of making a "meaningful assessment of the market for wholesale access to the transmission component of broadband Internet access service."[120] This assessment was particularly difficult because facilities-based wireline providers were at the time the only BIAS provider compelled by regulation to have a wholesale offering.[121] Moreover, the FCC even acknowledged that "in many areas, the incumbent LEC is currently the only wholesale provider of this transmission component," but nevertheless did not view this as dispositive on the issue of market competition in wholesale transmission.[122] The FCC never went so far as to affirmatively state that incumbents would necessarily share in the absence of a mandate, but instead chose the inverse: the FCC could not "state unequivocally that incumbent LECs would not otherwise provide wholesale access, absent this compulsion."[123]

This assurance did not assuage the concerns of CLECs, whose entire industry hinged on the FCC's weak contention that incumbents would not unequivocally not offer a

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[116] *2005 Wireline Broadband Order* at ¶ 43.

[117] *Id.* at ¶ 64.

[118] *Id.*

[119] *Id.* at ¶ 64, n.186.

[120] *Id.* at ¶ 63.

[121] *Id.*

[122] *Id.*

[123] *Id.*

wholesale transmission component.[124] In fact, many commenters urged the FCC to expand its market analysis to look not just at the availability of broadband for consumers, but also to consider the wholesale access market, which they viewed as imminently weakening or disappearing entirely in the wake of this classification.[125] Despite conceding in the same section that only one wholesale provider exists in many areas, the FCC cited "[v]igorous competition between different platform providers [which] already exists in many areas and is spreading to additional areas" as sufficient to provide consumers with the benefits of meaningful choice.[126] A quick examination of the market for wholesale broadband access today reveals that the FCC's predictions did not come to fruition; only a limited number of government-owned municipal networks have allowed for wholesale access.[127]

Moreover, almost in passing, the FCC brushed aside concerns that absent a sharing requirement, incumbents would charge monopoly prices in areas without another facilities-based competitor. Relying on the testimony of the incumbents, the FCC concluded that "service providers tend to set prices on a national or regional basis regardless of whether there are multiple broadband providers serving local markets."[128] However, such a claim cannot be meaningfully verified because the FCC refuses to publicize the Form 477 pricing data it collects from providers.[129]

Increased Intra- and Intermodal Competition. Another underlying premise of the FCC's deregulatory decision was a prediction that both intra- and intermodal competition in the provision of broadband services would proliferate.[130] The FCC hypothesized that competition in the broadband market—then definitively led by DSL and cable modem providers, which were both rapidly expanding—would boom as innovative technologies emerged and consumer demand for broadband continued to swell.[131] It pointed to "other existing and developing platforms, such as satellite and wireless, and even broadband over power line in certain locations" as indicative that BIAS would not be in a perpetual state of head-to-head competition between DSL and cable modem providers. Moreover, the FCC suggested that the "competitive pressure" from "other forms of broadband Internet access, whether satellite, fixed or mobile wireless, or a yet-to-be-realized alternative, will further stimulate deployment of broadband infrastructure, including more advanced infrastructure such as fiber-to-the-home."[132]

However, the FCC's prediction about the development of competition in the broadband market failed to anticipate the dominant position cable providers would occupy absent sharing requirements—particularly in the market for speeds above 100 Mbps. In fact,

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[124] *Id.* at ¶ 62.

[125] *Id.*

[126] *Id.*

[127] *Municipal FTTH Networks*, Institute for Local Self-Reliance, Community Networks (Mar. 19, 2019), https://muninetworks.org/content/municipal-ftth-networks.

[128] *Id.*

[129] *See* supra Part I.B.

[130] *2005 Wireline Broadband Order* at ¶ 50.

[131] *Id.*

[132] *Id.* at ¶ 57-58.

94 percent of all broadband subscriptions exceeding 100 Mbps are provided by local cable monopolies.[133] Moreover, "if you are one of the 100 million Americans living in the most densely populated 37,000 square miles in the continental United States, it is very likely your only choice for internet access over 25 Mbps is your local cable monopoly."[134]

Infrastructure Investment. A frequent refrain of the telecommunications industry—one that the FCC found highly persuasive in the *2005 Wireline Broadband Order*—is that any modicum of regulation or oversight will cause infrastructure investment to come to a grinding halt. Specifically, the FCC noted that sharing obligations "can have a significant impact on the ability of wireline platform providers to develop and deploy innovative broadband capabilities that respond to market demands."[135] Industry commenters made clear in the proceeding—as well as in messaging and public statements—that the additional costs of a sharing obligation diminished their incentive and ability to invest in and deploy new broadband infrastructure.[136]

Limited Market Penetration. Lastly, the FCC suggested that the wireline BIAS market was not ripe for regulation in its decision to deregulate.[137] While noting the recent growth in both cable modem and DSL markets, the FCC placed substantial weight on the fact that market penetration for the technologies was still far below the size of the potential market.[138] "The 20 percent cumulative penetration rate for broadband services stands in marked contrast to other, more mature markets the FCC has examined and regulated to varying degrees."[139]

To any observer of telecommunications history, the claim that the FCC should wait until the market is sufficiently "mature" should be striking. The history of telecommunications competition has been a series of post hoc fixes to incumbents exploiting their natural monopoly position at the expense of consumers. Waiting to impose sharing obligations will only let these monopolists further cement their market dominance, while providing no competitive impetus to lower prices or drive technological innovation.

Examining the broadband market today makes the fallacy of this argument even more apparent. The level of penetration has reached a point that now major cable providers like Comcast and Spectrum, dividing the geographic and service markets amongst one another, achieve growth primarily by raising prices for existing customers as opposed to serving new ones.[140] Regulators should not have—and should not now—stand idly by as last-mile monopolists continually hike up prices for the same legacy service.

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[133] *Fiber* at 38.

[134] *Id.* at 53.

[135] *2005 Wireline Broadband Order* at ¶ 44.

[136] *Id.*; *Fiber* at 53.

[137] *2005 Wireline Broadband Order* at ¶ 55.

[138] *Id.*

[139] *Id.*

[140] *Fiber* at 54.