

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC**

_____)	
In the Matter of)	
)	
Business Data Services in an Internet)	WC Docket No. 16-143
Protocol Environment)	
)	
Investigation of Certain Price Cap Local)	WC Docket No. 15-247
Exchange Carrier Business Data Services)	
Tariff Pricing Plans)	
)	
Special Access for Price Cap Local)	WC Docket No. 05-25
Exchange Carriers)	
)	
AT&T Corporation Petition for Rulemaking)	RM 10593
to Reform Regulation of Incumbent Local)	
Exchange Carrier Rates for Interstate Special)	
Access Services)	
_____)	

**COMMENTS OF THE FIBER TO THE HOME COUNCIL AMERICAS ON THE
FURTHER NOTICE OF PROPOSED RULEMAKING**

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The Fiber to the Home Council Americas (“FTTH Council” or “Council”)¹ hereby submits comments in response to the Federal Communications Commission’s (“Commission’s”)

¹ The FTTH Council’s mission is to accelerate deployment of all-fiber access networks by demonstrating how fiber-enabled applications and solutions create value for service providers and their customers, promote economic development, and enhance quality of life. The FTTH Council’s members represent all areas of the broadband access industry, including telecommunications, computing, networking, system integration, engineering, and content-provider companies, as well as traditional service providers, utilities, and municipalities. As of today, the FTTH Council has more than 300 entities as members. A complete list of FTTH Council members can be found on the organization’s website: <http://www.ftthcouncil.org>.

Further Notice of Proposed Rulemaking regarding regulation of business data services (“BDS”)² in the above-referenced proceedings.³

INTRODUCTION & SUMMARY

The Council submits that the Commission should refrain from regulating the rates, terms, and conditions for high performance BDS offered by any provider over all-fiber networks.

This Council’s proposal is based on the following facts and rationale:

- All-fiber networks support the provision of high performance – above 50 Mbps – BDS. The FNPRM finds that “competition is present...in many circumstances”⁴ for these services, and the Council herein (Section II) provides substantial additional evidence supporting and expanding upon that conclusion.
- Because all-fiber networks are critical infrastructure for the provision of high performance BDS to commercial and institutional customers, mobile and fixed wireless providers, and wholesale carriers, the Commission should facilitate (rather than erect barriers to) investments by providers to deploy these networks.⁵

² The term “business data services” refers to the dedicated point-to-point transmission of data at certain guaranteed speeds and service levels using high-capacity connections. These services are also known as “special access” services.

³ *Business Data Services in an Internet Protocol Environment et al.*, WC Docket No. 16-43 et al., Tariff Investigation Order and Further Notice of Proposed Rulemaking, FCC 16-54 (rel. May 2, 2016) (“FNPRM”).

⁴ *Id.*, ¶ 271.

⁵ Indeed, Chairman Wheeler recently noted that this proceeding is an important part of the Commission’s efforts to promote investment in technologies that will allow for the deployment of 5G services. See “The Future of Wireless: A Vision for U.S. Leadership in a 5G World,” Remarks of Tom Wheeler, Chairman, Federal Communications Commission, Before the National Press Club (June 20, 2016).

- Since all-fiber networks are new deployments in most instances, no provider has an inherent advantage in providing fiber-based services, and the Commission should enable all providers to have an equal opportunity to build them.

In these comments, the Council elaborates on its proposal by examining the evidence in the record and supplying additional data about the development of competition for high performance BDS.

Additionally, the Council explores decisions by the Commission to refrain from regulating fiber-based services and the effects of those “hands off” policies. In particular, the Commission’s 2003 order, in which it declined to impose obligations on incumbent local exchange carriers (“ILECs”) to unbundle fiber-to-the-home (“FTTH”) facilities, resulted in exponential growth in deployment of FTTH by both incumbent and competitive providers, coupled with steadily declining prices. Because similar competitive considerations are present in the high performance BDS market, the Council submits that Commission should follow its FTTH precedent and not regulate high performance BDS.

I. EVIDENCE IN THE RECORD DEMONSTRATES THAT THE MARKET IS COMPETITIVE FOR BDS AT BANDWIDTHS OF 50 MBPS AND ABOVE

A primary concern for the Commission in this proceeding is ensuring that where competition is lacking in the market for BDS, such “non-competitive market conditions do not disadvantage business customers and their ability to compete and innovate in downstream markets.”⁶ The Commission has regulated prices, tariffs and other components of BDS offered by ILECs, but in 1999 it adopted a framework that granted ILECs pricing flexibility in certain

⁶ FNPRM, ¶ 5.

geographic areas if specified regulatory triggers were satisfied.⁷ Unfortunately, those triggers were not, as the Commission had hoped, “a proxy for potential competition in the given geographic area,” and the Commission suspended pricing flexibility in 2012.⁸ Both the 1999 and 2012 decisions make clear, however, that the Commission’s focus at that time was on the market for legacy time-division multiplexing (“TDM”) BDS, not high performance services.⁹

In the FNPRM, the Commission proposes to develop a new test for determining whether there is sufficient competition in a given market area and sets forth a “technology-neutral framework” for regulating BDS in markets that are deemed non-competitive.¹⁰ These proposals are based upon evidence in the record that ILECs generally continue to hold market power for DS1- and DS3-based BDS. With respect to high performance (fiber-based) BDS, however, the evidence tells a different story.¹¹

⁷ See *Access Charge Reform*, CC Docket No. 96-262, *Price Cap Performance Review for Local Exchange Carriers et al.*, CC Docket No. 94-1 et al., Fifth Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 14221 (1999).

⁸ See *Special Access for Price Cap Local Exchange Carriers*, WC Docket No. 05-25, *AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, RM-10593, Report and Order, 27 FCC Rcd 10557 (2012) (“2012 Suspension Order”); see also FNPRM, ¶ 17.

⁹ See *2012 Suspension Order*, ¶ 12 (explaining that “[s]pecial access continues to play a critical role in our economy” and “[f]our of the largest incumbent LECs recently reported that their combined 2010 revenues from sales of DS1s and DS3s exceeded \$12 billion.”); see also *id.*, Dissenting Statement of Commissioner Ajit Pai (arguing that suspension of pricing flexibility for DS1 and DS3 services would create uncertainty among fiber providers that would “chill industry’s willingness to invest capital in broadband infrastructure, deploy next-generation broadband networks, and create jobs.”).

¹⁰ See FNPRM, ¶ 270.

¹¹ Even before the Commission commenced the special access proceeding in 2005, market evidence suggested that fiber-based services were provided in a competitive market. See *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers et al.*, CC Docket No. 01-338 et al., Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 18 FCC Rcd 16978, ¶ 298 (2003) (“Triennial Review Order”) (noting that

When examining the state of the market for fiber-based BDS, the Commission relies primarily on the analysis performed by Dr. Marc Rysman,¹² whose white paper makes numerous suggestions that “there may not be market power in the supply [of] BDS at bandwidths in excess of approximately 50 Mbps.”¹³ For instance, when discussing competition for BDS on a per-building basis, Dr. Rysman states:

Although it appears ... that relatively few buildings are served by competitive providers, that result may be masking important heterogeneity in buildings. In their narrative responses, [competitive providers (“CPs”)] reported that they target high bandwidth and fiber customers. It is possible that Table 7 understates important competition at higher bandwidths. In order to pursue this issue, I examined the set of buildings in which an ILEC or CP reported fiber connections. There were nearly 490,000 of these, or about 40 percent of the unique 1.2 million locations reported. Table 8 provides the breakdown by carrier type. We see that 6% of buildings with fiber are served by both an ILEC and a CP, somewhat higher than buildings overall. More strikingly, the number of buildings served by CPs is almost equal that of ILECs. Thus, when looking at fiber-connected buildings, which are presumably buildings with greater demand, whether due to at least one high-bandwidth customer or many small customers, CPs are a much more robust presence.¹⁴

Dr. Rysman later concludes “[w]hereas the effects of local competition, such as at the building level or the census blocks, are important for DS1 and DS3 lines, they are much less clear for higher end bandwidths.”¹⁵ Dr. Rysman’s conclusions are bolstered by other evidence provided

“competitors have built fiber loops in buildings that carry a significant portion of the competitive traffic in certain MSAs”).

¹² See Dr. Marc Rysman, *Empirics of Business Data Services* (Apr. 2016) (attached as Appendix B to the FNPRM) (“Rysman White Paper”).

¹³ FNPRM, ¶ 237.

¹⁴ *Id.*, App’x B, p. 212.

¹⁵ *Id.*, App’x B, p. 221.

in this proceeding.¹⁶ Dr. Rysman also observes that in the current market, “[f]iber optic cable can deliver higher bandwidth and service levels, and most new investment is in fiber.”¹⁷

In the FNPRM, the Commission follows on Dr. Rysman’s conclusions and suggests that regulation of high performance BDS may not be necessary. Specifically, the Commission states “given limited complaints in the record about higher bandwidth services, and evidence that competitive LEC market share of fibered buildings is much higher than its general share, we recognize that supply of higher bandwidth services may often be more competitive than supply of lower bandwidth services.”¹⁸ The Council agrees. The evidence in the record supports a conclusion by the Commission that it should not apply any existing or new regulations of BDS to fiber-based BDS and should encourage further investment in fiber infrastructure. Additionally, as discussed in more detail below, external market information further demonstrates that customers are already reaping the benefits of a competitive market for high performance BDS, and market trends indicate that robust competition and investment in fiber will continue in the future, absent any regulation from the Commission.

II. ANALYSIS OF RECENT MARKET EVIDENCE INDICATES THAT THE HIGH PERFORMANCE (FIBER) BDS MARKET IS COMPETITIVE

A competitive market is characterized by falling prices, increased output, and greater innovation.¹⁹ When evaluated against these metrics, it is clear that the market for high

¹⁶ See, e.g., *Ex Parte* Letter from Christopher Shenk, Attorney for AT&T, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 05-25, RM-10593, Att. A at 5 (filed Mar. 21, 2016) (stating that “[t]here is no basis for revisiting forbearance of Ethernet services [because] ... [t]he data collection and record more generally confirm that ILECs, CLECs and cable companies are all competing successfully to provide Ethernet.”).

¹⁷ FNPRM, App’x B, p. 202.

¹⁸ *Id.*, ¶ 244.

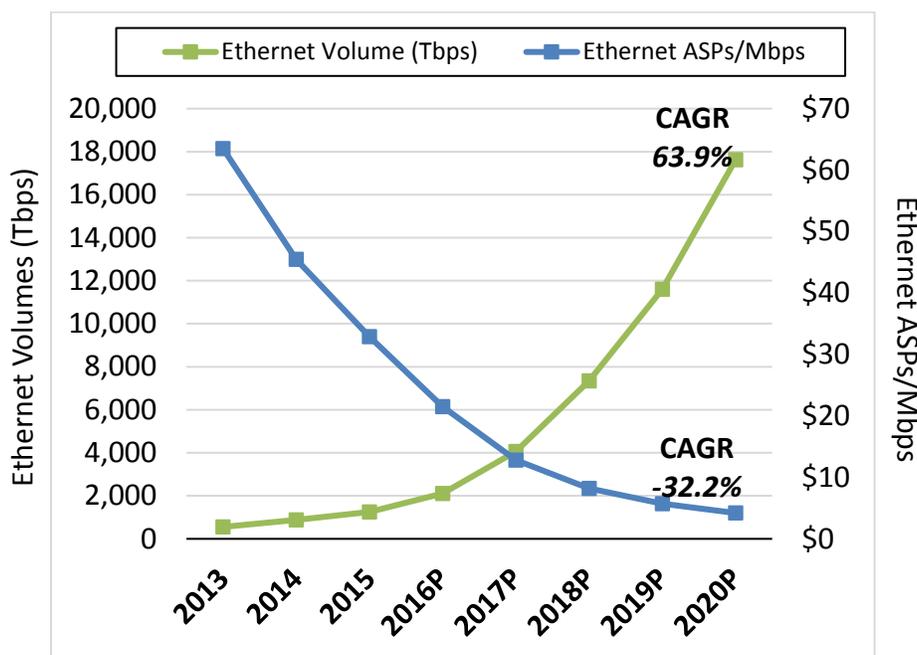
¹⁹ See “Horizontal Merger Guidelines,” Department of Justice and Federal Trade Commission (2010).

performance BDS, which, for the past decade has been operating essentially free from regulation, is and will remain competitive. As discussed herein, available market data and other information demonstrate that prices for high performance services (above 50 Mbps products) are declining despite continuously increasing demand, the supply of services is increasing, and innovation is increasing. Further market concentration is decreasing, and there is no evidence in the record of collusion among competitors. Importantly, all of these benefits have occurred without Commission oversight. The Commission therefore should facilitate continued competition and encourage further investment in fiber by ILECs, CLECs, cable companies, and other providers by refraining from imposing regulations on fiber-based services.

A. Prices for Fiber-Based Services Are Steadily Declining

One key indicator of a competitive market is a decline in price despite an increase in demand. In the high performance services market, this trend has been ongoing for several years, and is projected to continue in the future in light of ever-increasing demand for high bandwidth services. For instance, Ovum, Ltd., an independent analyst and consultancy firm based in London, recently released a report regarding current and projected future Ethernet services on a global scale, illustrated in the graphic below:

***Global Historical and Forecast
Ethernet Volumes & \$/Mbps 2013-2020 (Ovum)***



As the graph indicates, Ovum found that between 2013 and 2015, Ethernet prices on a global scale were cut in half.²⁰ This was due primarily to increased competition. In addition, once providers incur the major capital expense of deploying fiber, they can readily upgrade Ethernet ports to offer higher speeds. This enables them to earn sufficient revenues while reducing per unit prices. Ovum further projects that by 2020, Ethernet volumes will have grown at a compound annual growth rate (“CAGR”) of 63.9 percent, coupled with a corresponding drop in price by 32.2 percent.²¹ The U.S. is experiencing a similar pricing pattern. For example, Zayo, currently one of the largest CLECs in the U.S., reported average annual price decreases between

²⁰ See Ian Redpath, “Ethernet Services Forecast Spreadsheet: 2015-2020” Ovum (Sept. 28, 2015) (subscription required), <https://www.ovumkc.com/Products/Telecoms/Intelligent-Networks/Ethernet-Services-Forecast-Spreadsheet-2015-20/Summary>.

²¹ See *id.*

2010 and 2015 for its GigE Full Rate (>1000 Mbps) and Fractional GigE (101-1001 Mbps) services of 4.9 percent and 10.1 percent, respectively.²²

B. Demand and Revenue Are Growing

The steady decrease in Ethernet prices is itself remarkable and indicates that customers are benefiting from competition and from the deployment of fiber infrastructure. However, this trend is even more compelling because demand for high performance services is growing substantially. Currently, total spending on BDS in the U.S. is estimated at approximately \$45 billion.²³ While the majority of that spending today is for legacy services, often provided over copper TDM circuits,²⁴ it is rapidly shifting as customers demand high performance Ethernet services.²⁵ In fact, Ethernet spending is expected to grow by more than 50 percent by 2020.²⁶

Growing demand in the U.S. for high-bandwidth services and capabilities is attributable to numerous sources. Arguably the most significant source of demand is mobile data. As demonstrated in the graphic below, U.S. mobile data traffic is projected to grow by nearly 50 percent annually between 2015 and 2020.

²² Zayo's Ethernet pricing was compiled from multiple sources. *See* Zayo, "Pricing Trends" (Q4 2015 – Q2 2016), "Earnings Supplements" (Q1 2011 – Q3 2015), <http://investors.zayo.com/earnings-releases>. These price declines likely mask an even greater decline on a price per megabit basis, as the average circuit speeds for these two services have almost certainly increased.

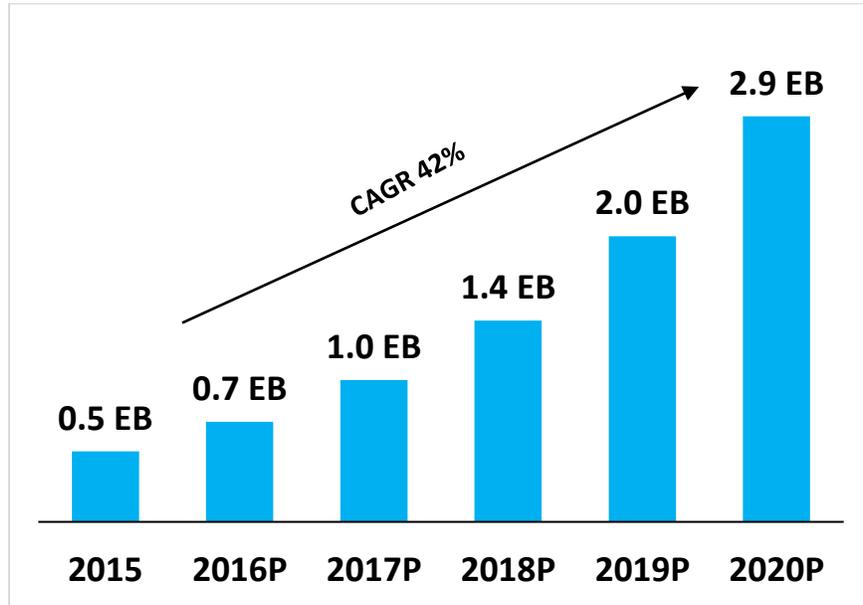
²³ *See* FNPRM, ¶ 7.

²⁴ *See id.*

²⁵ *See id.*

²⁶ *See* "Forecast: Communications Services, 2013-2020, Worldwide, 1Q16 Update," Gartner (Mar. 26, 2016) (subscription required), <https://www.gartner.com/doc/3266631/forecast-communications-services-worldwide-> (projecting that BDS spending on Ethernet and fiber-based services will jump from \$11 billion in 2015 to \$17 billion in 2020).

U.S. Mobile Data Traffic Forecast (2015 – 2020)²⁷
(Exabytes per Month)



As a result of this demand, mobile providers require access to high performance BDS supported by fiber infrastructure, and new investments in fiber are essential as the supply is still insufficient. Today, at least 30 percent of cell sites in the U.S. are not served by fiber.²⁸ Mobile providers also will need more fiber to support small cell build-outs, as well as front-haul for

²⁷ See “Cisco VNI Complete Forecast Highlights Tool,” Cisco, (June 1, 2016) http://www.cisco.com/c/m/en_us/solutions/service-provider/vni-forecast-highlights.html. Cisco estimates business IP traffic will continue to grow at an average rate of 18 percent annually through to 2020. See *id.* See also FNPRM, ¶ 77.

²⁸ According to the FNPRM, wireless carriers spent \$3 billion out of \$5.6 billion in wireline backhaul in 2013 on packet-based services. See FNPRM, n.206. This implies that approximately 65 percent of cell sites are served with fiber, meaning that 35 percent of cell sites are not. Separately, the Order noted that 40 percent of cell sites are served by microwave backhaul, which suggests fiber backhaul may serve fewer than 60 percent of cell sites. See *id.*, ¶ 68. See also “New study details operator plans for small cell backhaul,” Infonetics Research (Dec. 11, 2011), <http://www.infonetics.com/pr/2011/Carrier-Small-Cell-and-LTE-Backhaul-Strategies-Survey-Highlights.asp> (projections for 2013 estimated 90 percent of cell sites in urban areas were to be fiber-fed).

cloud-RAN deployments, where fiber is needed to connect base stations at one location to remote radio heads on towers at other locations.²⁹

Other sources of demand for high-bandwidth enterprise-level services are schools and libraries (in part through the E-rate program) and healthcare organizations. For instance, The State Educational Technology Directors Association recommends that schools should aim to provide service speeds of at least 1 Gbps per 100 students/staff for 2017-2018, a 10-fold increase from the 100 Mbps target in 2014-2015.³⁰ Similarly, healthcare organizations such as hospitals, medical centers, and academic facilities require fiber networks to ensure speed and reliability for Ethernet service.³¹ In particular, migration to cloud-based storage, universal adoption of electronic health records systems, increasing file sizes,³² Big Data applications, and the proliferation of connected devices will drive increasing bandwidth demand.³³ Additionally,

²⁹ See Sean Buckley, “Zayo, Crown Castle, other dark fiber providers could get revenue boost from C-RAN fronthaul, says Well Fargo,” FierceTelecom (Feb. 12, 2016), <http://www.fiercetelecom.com/story/zayo-crown-castle-other-dark-fiber-providers-could-get-revenue-boost-c-ran/2016-02-12>.

³⁰ See “The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs,” State Educational Technology Directors Association (Sept. 28, 2015), http://www.setda.org/wp-content/uploads/2013/09/Broadband_Trifold.pdf. The Commission’s E-Rate program is designed to facilitate broadband deployment, and recently increased the annual budget to \$3.9 billion – up from \$2.4 billion in 2014. See *Modernizing the E-rate Program for Schools and Libraries, et al.*, WC Docket No. 13-184 et al., Second Report and Order and Order on Reconsideration, 29 FCC Rcd 15538, ¶ 6 (2014) (“2014 E-Rate Modernization Order”).

³¹ In 2010, the Commission established bandwidth capacity recommendations for various types of health care organizations. For example, the Commission recommended that large medical centers maintain a minimum bandwidth capacity of 1,000 Mbps. See “Health Care Broadband in America” FCC (2010), <http://download.broadband.gov/plan/fcc-omnibus-broadband-initiative-%28obi%29-working-reports-series-technical-paper-health-care-broadband-in-america.pdf>. These recommendations likely are outdated in light of continued growth in the amounts of data enterprise-level customers routinely create.

³² For instance, a single magnetic resonance imaging (MRI) file can be as large as 5 GB.

³³ See “The Digital Universe Driving Data Growth in Healthcare,” EMC Corporation, (Nov. 26, 2014), <https://www.emc.com/analyst-report/digital-universe-healthcare-vertical-report-ar.pdf>

while global IT spending is forecast to grow at an average rate of 3.3 percent annually between 2015 and 2020, IT expenses for healthcare organizations are projected to grow on average 5.5 percent annually over the same period.³⁴ This rapidly growing data demand requires further investment in fiber if hospitals and clinics are to have sufficient high performance BDS connectivity.

C. The Supply of High Performance BDS Is Increasing

Services from Traditional Incumbent and Non-Incumbent Providers

In addition to falling prices and increasing demand, the supply of high performance services is growing, due to participation in the market by both traditional (ILEC, CLEC and cable) providers and non-traditional providers, as well as the development of new and innovative business models for providing such services. With respect to traditional providers, ILECs, CLECs, and cable companies have continued to expand their fiber networks since the 2013 Special Access data collection. Unlike the DS1 and DS3 markets, the diversity of provider types that are participating in the fiber/Ethernet market and expanding their networks is indicative of a market that is competitive.³⁵ The last few years in particular have seen continued expansion of

(projecting that total stored healthcare data will increase to 2,314 exabytes by 2020, up from 153 exabytes in 2013).

³⁴ See “Worldwide IT Spending Will Reach \$2.8 Trillion in 2019 with the Strongest Growth Coming from the Healthcare Industry,” IDC (Feb. 4, 2016), <https://www.idc.com/getdoc.jsp?containerId=prUS41006516>.

³⁵ See FNPRM, Section V.A.10. Sprint recently stated that according to results from its Ethernet Pricing Model, ILECs “charge rates for fiber-based BDS that far exceed prices necessary to earn a substantial return on the carrier’s investment” and that “an assumption that effective ‘competition broadly exists’ for high-capacity BDS would be incorrect.” See *Ex Parte* Letter from Paul Margie, Harris Wiltshire & Grannis LLP, Counsel to Sprint Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 05-25, RM-10593 (filed June 3, 2016). However, Sprint failed to provide any evidence that its experience in the high-capacity BDS market was representative of all non-ILEC providers in the

operators' fiber networks and continued growth in the number of lit locations, reflecting increased choice for enterprise customers and lower incremental costs for building out to additional locations. For instance, available data shows that ILECs, CLECs, and cable providers have taken steps to add a total of more than 100,000 miles of metro fiber between 2013 and 2015.³⁶ Metro fiber route miles increased at an average rate of eight percent for each type of provider during that time.³⁷ Additionally, CLECs and cable providers increased the number of fiber lit buildings they serve at an average rate of 14 percent between 2013 and 2015.³⁸ Moreover, a recent study indicates that 46.2 percent of commercial buildings with more than 20 employees are now connected by fiber, as compared with 10.9 percent in 2004.³⁹ This growth is indicative of the ever-increasing demand for high-bandwidth services by enterprise customers.⁴⁰

market. Moreover, there is evidence in the record, as demonstrated in the Rysman White Paper, to indicate that the market is, in fact, competitive.

³⁶ See Robert Powell, "Metro Fiber and On-Net Buildings List," Telecom Ramblings (2013-2015), <http://www.telecomramblings.com/metro-fiber-provider-list/>. The companies included in this analysis are AT&T, Charter Business, Cox Communications, Lightpath, Wave Broadband, Level 3, Lighttower, Cogent, Sunesys, XO Communications, Lumos Networks, FiberLight, Unite Private Networks, Edison Carrier Solutions, Southern Light Fiber, Integra Telecom, Alpheus Communications, Wilcon, DQE Communications, FPL Fibernet, Mid-Atlantic Broadband, SRP Telecom, ICTX WaveMedia, and US Signal.

³⁷ See *id.*

³⁸ See *id.*

³⁹ "U.S. Business Fiber Penetration Reaches 46.2%" Vertical Systems Group (Apr. 14, 2015), <http://www.verticalsystems.com/vsgpr/2015-u-s-business-fiber-penetration-reaches-46-2/>.

⁴⁰ For CLECs, fiber network expansion has been motivated by the pursuit of additional enterprise and wholesale customers. For ILECs and cable companies, growth in fiber-fed consumer services has had positive knock-on effects for their ability to serve enterprise customers. For instance, Comcast has deepened its fiber footprint to be able to offer service speeds of 2 Gbps to 18 million homes. See Sean Buckley, "Comcast follows Google Fiber's \$70 plan in Atlanta, but price comes with a contract catch," FierceTelecom (Mar. 15, 2016), <http://www.fiercetelecom.com/story/comcast-follows-google-fibers-70-plan-atlanta-price-comes-contract-catch/2016-03-15>. AT&T, CenturyLink and other telephone companies have been building out FTTH to offer 1 Gbps services in a growing number of metro areas. See "Google

Importantly, the fact that CLECs and cable providers are increasing their metro fiber route miles at the same rate as ILECs illustrates that all types of providers have the means and desire to capitalize on that demand.⁴¹

CLECs and cable companies are responsible for a significant portion of the growth in the supply of high performance services in recent years. The growing investment by these non-ILEC providers has made the market for Ethernet services more competitive, as demonstrated by their climb up the Ethernet supplier rankings. For instance, Level 3 jumped from the ninth largest Ethernet provider in 2013 to the second largest in 2015.⁴² Cable companies also have increasingly become major players in the Ethernet market. Comcast in particular has invested heavily, including by launching a sales group in 2015 to target Fortune 1000 customers.⁴³ The shifts in competitive positioning demonstrate that the Ethernet market is one of growing dynamism.

Fiber, AT&T, CenturyLink drive the 1 Gbps game,” FierceTelecom (Aug. 21, 2013), <http://www.fiercetelecom.com/special-reports/google-fiber-att-centurylink-drive-1-gbps-game>.

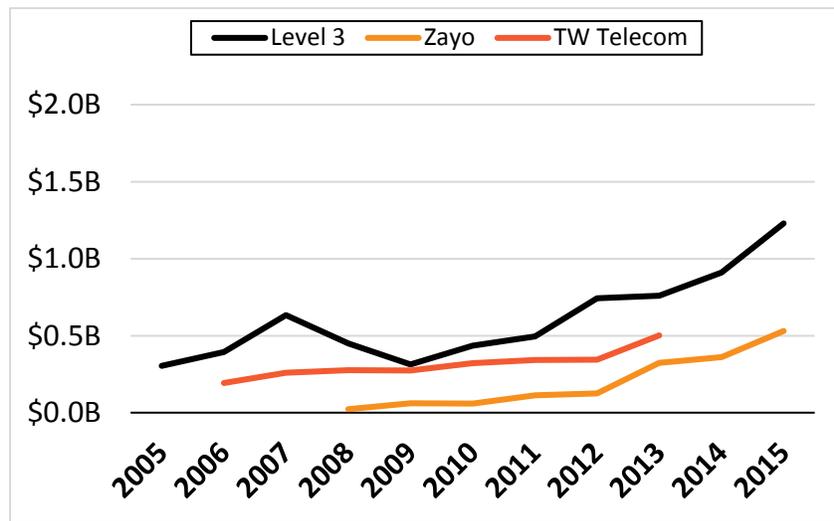
⁴¹ Indeed, the Commission acknowledged in the FNPRM that “competitive LEC market share of fibered buildings is much higher than its general share.” FNPRM, ¶ 244.

⁴² See “Global Provider Ethernet Leaderboards,” Vertical Group Systems (2009-2015), <http://www.verticalsystems.com/leaderboards/>. See also FNPRM, ¶ 83. Level 3’s acquisition of TW Telecom has allowed it compete with the top two ILECs (AT&T and Verizon) for national deals from Fortune 500 companies. Similarly, CenturyLink’s acquisition of Qwest has allowed it to offer customers a larger footprint.

⁴³ “Comcast Business Announces New Unit Targeting Fortune 1000 Enterprises,” Comcast (Sept. 16, 2015), <http://corporate.comcast.com/news-information/news-feed/comcast-business-announces-new-unit-targeting-fortune-1000-enterprises>.

The chart below shows that competitive LECs have been investing substantial resources for years to develop continued organic expansion of their networks to serve customers ranging from mid-market enterprises to global enterprises to wholesale carrier customers.

Capital Expenditures of Select CLECs (2005 – 2015)⁴⁴



Providing wholesale connectivity for data centers and cellular backhaul has been a major driver of capital investment.⁴⁵ Additionally, some CLECs have looked at fiber-to-the-tower (“FTTT”) build-outs as strategic investments to deepen their fiber footprint. For example, Zayo has been aggressive in bidding for FTTT projects from wireless providers, viewing them as strategic

⁴⁴ Capital expenditure information for these three CLECs was compiled from multiple annual SEC (Form 10-K) reports. See Level 3 Communications, Annual Report (Form 10-K) (2005 – 2015), <http://investors.level3.com/investor-relations/financial-information/quarterly-financials/default.aspx>; Zayo Group, Annual Report (Form 10-K) (2005 – 2015), <http://investors.zayo.com/sec-filings>; TW Telecom, Annual Report (Form 10-K) (2005 – 2015), <http://quicktake.morningstar.com/stocknet/secdocuments.aspx?symbol=twtc>.

⁴⁵ See, e.g., “2015 Annual Report Notice of 2016 Annual Meeting and Proxy Statement,” Level 3 Communications at 3 (May, 19, 2016), http://s1.q4cdn.com/840339377/files/doc_financials/2015/Level_3_10K_Combio.pdf.

investments that allow Zayo to seek other opportunities on and near its fiber routes.⁴⁶ Other providers pursuing FTTT as strategic investments include Southern Light and CenturyLink.⁴⁷

Cable providers likewise are making substantial investments in high-bandwidth infrastructure, having identified commercial services as a source of rapid growth. Commercial services investments by cable companies have been largely focused on deploying Ethernet-enabled fiber within their current franchise areas because Ethernet over Hybrid fiber-coaxial (“HFC”) is not sufficient to meet the bandwidth needs of enterprise-level customers.⁴⁸

⁴⁶ See Sean Buckley, “Zayo’s Caruso: Tower backhaul tenants provide FTTT, enterprise upsell opportunities,” FierceInstaller (May 11, 2016), <http://www.fierceinstaller.com/story/zayos-caruso-tower-backhaul-tenants-provide-fttt-enterprise-upsell-opportun/2016-05-11>. Zayo’s mobile infrastructure product group (i.e., dark fiber to cell sites) is the only one of its 10 product groups to show negative unlevered free cash flow. See “Investor Presentation: Results through Fiscal Year 2016 Q3,” Zayo Group Holdings, Inc. (2016), <http://investors.zayo.com/~media/Files/Z/Zayo-IR-V2/earnings-releases/2016/zayo-fy2016q3-earnings-call-presentation.pdf>. Zayo’s investor presentation for its second quarter of fiscal year 2016 notes two major new sales (one for a municipal government, one for an Internet services customer) that leverage in-process or completed fiber-to-the-tower builds. See “Investor Presentation: Results through Fiscal Year 2016 Q2,” Zayo Group Holdings, Inc. (2016), <http://investors.zayo.com/~media/Files/Z/Zayo-IR-V2/documents/zayo-investor-presentation-fy-16-q2.pdf>. In the third quarter of fiscal year 2016, Zayo had \$813 million in capital expenditures committed to “strategic” fiber projects that will add approximately 9,000 route miles to its 111,693 existing route miles – most of these were for dark fiber to cell sites. See “Investor Presentation: Results through Fiscal Year 2016 Q3,” Zayo Group Holdings, Inc. (2016), <http://investors.zayo.com/~media/Files/Z/Zayo-IR-V2/earnings-releases/2016/zayo-fy2016q3-earnings-call-presentation.pdf>.

⁴⁷ See Sean Buckley, “CenturyLink’s Ewing: We’ll bring fiber to 19-20,000 towers this year,” FierceTelecom (Aug. 15, 2013), <http://www.fiercetelecom.com/story/centurylinks-ewing-well-bring-fiber-19-20000-towers-year/2013-08-15>.

⁴⁸ See *Ex Parte* Letter from Thomas Jones, Counsel for Level 3 Communications, LLC and EarthLink, Inc. to Marlene Dortch, Secretary, Federal Communications Commission, WC Docket No. 05-25, RM-10593 (Apr. 14, 2016) (“Ethernet-over-HFC is available only in a relatively small number of locations and ... where it is available, such services are often subject to high levels of jitter and a relatively low maximum transmission unit (‘MTU’), and are generally less reliable than Ethernet-over-fiber or dedicated services offered by incumbent and competitive LECs.”). See also “Comcast Business Expands Fiber Optic Network in Northwest Suburban Hanover Park, IL,” Comcast (May 16, 2016), <https://comcastgcr.com/2016/05/16/comcast-business-expands-fiber-optic-network-in-northwest-suburban-hanover-park-il/> (“Fiber means increased bandwidth – and increased bandwidth allows

Non-Traditional Providers and Innovative Business Models

Competition in the high performance market is bolstered by new and innovative business models for delivering the services offered by both traditional and non-traditional providers. For example, apart from the E-Rate program, data indicates that providers have begun investing in high-bandwidth infrastructure for the purpose of serving schools and that competition exists in this corner of the market.⁴⁹ Further, a number of non-traditional service providers, such as dark fiber specialists,⁵⁰ tower operators,⁵¹ and real estate investment trusts⁵² are deploying fiber to provide high performance BDS.

III. THE COMMISSION HAS RECOGNIZED PREVIOUSLY THAT REGULATION OF FIBER-BASED SERVICES IS UNNECESSARY

Over a decade ago, the Commission refrained from requiring ILECs to provide unbundled access to their FTTH facilities. As a result, incumbent and competitive providers rapidly began to deploy FTTH networks and in aggregate have invested many tens of billions in these networks since then. Moreover, there has been no evidence of competitive harm as a result

businesses to access more and more applications and services in the cloud, accommodate rapidly increasing numbers of employees in the field using mobile devices and exchange large amounts of data.”).

⁴⁹ In 2015, 77 percent of school districts met the FCC’s 100 kbps/user access goal, a 43 percent increase from 2013. See “2015 State of the States: A report on the state of broadband connectivity in America’s public schools,” Education Superhighway (Nov. 18, 2015), http://cdn.educationsuperhighway.org/assets/sos/full_report-c2e60c6937930e8ca5cdbf49d45d45c8.pdf.

⁵⁰ Fatbeam, a small dark fiber provider in Pacific Northwest founded in 2010, can support up to 400 Gb of lit transport capacity over a single pair. See “Dark Fiber,” fatbeam, <http://www.fatbeam.com/#!darkfiber/cw2x>.

⁵¹ Tower operator Crown Castle has expanded its services to offer fiber backhaul, in part by acquiring Quanta Fiber Networks, Inc., 24-7 Mid Atlantic Network, and Access Fiber Group.

⁵² Real estate investment trusts such as CS&L lease communications assets that qualify as real property, finance fiber for existing and new customers, and act as a financing partner to facilitate mergers and acquisitions.

of this policy. The Council submits that accelerated investment and fiber deployments will occur in the BDS market if the Commission adopts the Council’s proposal.

In its 2003 Triennial Review Order, the Commission found that ILECs and competitors had the same barriers to entry and opportunities for recouping investment for FTTH services.⁵³ Specifically, the Commission determined that, at least for greenfield FTTH deployments, “incumbent LECs do not have a first-mover advantage that would compound any barriers to entry” because “both incumbent and competitive carriers must negotiate rights-of-way, respond to bid requests for new housing developments, obtain fiber optic cabling and other materials, develop deployment plans, and implement construction programs.”⁵⁴ The Commission further observed that “competitive LECs are leading the overall deployment of FTTH loops ... throughout the nation.”⁵⁵ Even in instances where an incumbent LEC might have an advantage due to existing network infrastructure, the Commission found that “the revenue opportunities associated with deploying any type of FTTH loop are far greater than for services provided over copper loops,” and therefore Commission intervention was not required to incentivize non-incumbent LEC providers to enter the market.⁵⁶ Based on this conclusion, and with the objective of encouraging further investment in fiber, the Commission declined to require incumbents to provide unbundled access to their FTTH facilities by competitors.⁵⁷ The result of this hands-off

⁵³ See Triennial Review Order, ¶ 275.

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ *Id.*, ¶ 276.

⁵⁷ *Id.*, ¶ 279 (“[O]ur FTTH policy adopted herein should not adversely affect competitive LECs for several reasons. First, competitive LECs have demonstrated that they can self-deploy FTTH loops and are doing so at this time. Second, competitive LECs can continue to use resale as a means for serving mass market customers after incumbent LECs deploy FTTH loops. Finally, competitive LECs can continue to have unbundled access to existing copper facilities, to the extent such facilities are available.”). The Commission similarly took steps to promote fiber

approach was exponential growth in deployment of FTTH, coupled with steadily declining prices.⁵⁸ In addition to investment in FTTH deployments, organic competition in the marketplace also has spurred innovation as to how FTTH services are offered by both traditional and non-traditional service providers.⁵⁹ Similar competitive considerations still exist today for other types of fiber deployments and services, including high performance BDS. In fact, as shown by the data above, for all types of carriers seeking to deploy fiber-based infrastructure and services, the barriers to entry have continued to decline and revenue opportunities continue to grow due to ever-increasing demand for high-capacity services. In light of this data, the Commission should follow its FTTH precedent and decline to regulate fiber-based BDS as a

investment in its 2014 E-Rate Modernization Order. *See* 2014 E-Rate Modernization Order, ¶ 17 (“To encourage efficient investment in high-speed broadband infrastructure, including the deployment of fiber, we direct USAC to suspend for four years its policy of requiring applicants to amortize large category one non-recurring charges. Encouraging construction of high-speed connections to schools and libraries is a crucial part of our effort to ensure that all schools and libraries achieve our connectivity targets. Suspending the amortization requirement will give applicants the flexibility to plan large construction projects knowing they can recover the E-rate supported portion of any non-recurring costs upfront, thus providing greater certainty regarding funding and removing this potential barrier to infrastructure investment.”).

⁵⁸ According to a recent RVA market research report, FTTH deployments skyrocketed from 23,000 homes in 2002 to approximately 12.3 million homes in mid-2015, and “FTTH construction is expected to reach record levels by 2016 or 2017.” *See* “The U.S. Fiber Revolution ... And the Real Position of U.S. Broadband,” RVA, LLC (Nov. 5, 2015), <http://www.rvalc.com/ftth-reports/>. At the same time, “FTTH technology has resulted in homes with 50 percent lower cost per Mbps than cable homes and 80 percent lower cost per Mbps than DSL homes.” *Id.*

⁵⁹ In previous submissions, the Council has kept the Commission apprised of key developments in the deployment of all-fiber networks, including the Google Fiber project in cities across the U.S., the Gig.U initiative for connecting university communities, and a number of programs – including the US Ignite and “Gig Tank” programs – to develop fiber-ready applications and services. *See* Comments of the Fiber to the Home Council Americas on the Tenth Broadband Progress Notice of Inquiry, GN Docket No. 14-126 (filed Sept. 4, 2014).

means of encouraging further investment in and deployment of fiber infrastructure and services.⁶⁰

CONCLUSION

In conclusion, the Commission should not impose regulations on the rates, terms, and conditions for high performance BDS offered by any provider over all-fiber networks and should provide incentives for providers to invest in critical all-fiber infrastructure. The Council submits that the evidence in the record in this proceeding, as well as the substantial market data and information presented in these comments, demonstrates that the high performance BDS market is

⁶⁰ An additional rationale to support the Council’s proposal is provided by Section 706 of the Communications Act. Under this section, the Commission is required to “encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans . . . by utilizing, in a manner consistent with the public interest, convenience, and necessity, price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.” 47 U.S.C. § 1302(a). Consistent with this mandate and in light of the evidence in this proceeding and provided in these comments, the Council submits that the best approach to encourage further investment in fiber-based infrastructure and services is to refrain from regulating the rates, terms, and conditions for providers of such services. Indeed, Commissioner Pai suggested in his dissenting statement to the FNPRM that “price regulation is likely to reduce investment in fiber and Ethernet services by several billion dollars each year.” FNPRM, Dissenting Statement of Commissioner Ajit Pai, n.7 (citing Dr. Hal Singer, Economists Incorporated, *Assessing the Consequences of Additional FCC Regulation of Business Broadband: An Empirical Analysis* (Apr. 7, 2016)). Continued investment in fiber will result in additional competition for high performance BDS, which increases the likelihood of achieving the Commission’s stated objective in the FNPRM of “encourage[ing] the migration to new technologies.” *See* FNPRM, ¶ 7.

competitive. As a result, regulation of fiber-supported BDS is not warranted and would undermine the benefits now being provided in the market.

Respectfully Submitted,

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