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Via Electronic Filing

June 28, 2016

Marlene H. Dortch, Esq.
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: ***Special Access for Price Cap Local Exchange Carriers;
WC Docket No. 05-25, RM-10593***

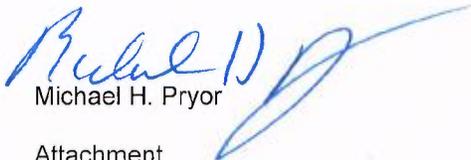
Dear Ms. Dortch:

Pursuant to the procedures outlined in the Data Collection Protective Order¹ in the above- referenced proceedings, Cox Communications, Inc. ("Cox") hereby submits a redacted version of the attached comments for electronic filing. Confidential and highly confidential treatment of the redacted portions of the attached document is required to protect information derived from data submitted in response to the FCC's Data Collection Order.²

In accordance with the Data Collection Protective Order, Cox will file a hardcopy of the attached document with the Secretary's Office, and deliver two additional hardcopies to Christopher S. Koves, Pricing Policy Division, Wireline Competition Bureau, without redaction.

Please contact me if you have any questions or require any additional information.

Respectfully submitted,


Michael H. Pryor

Attachment

¹ *Special Access for Price Cap Local Exchange Carriers; AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services, Order and Data Collection Protective Order, 29 FCC Rcd. 11,657 (Wireline Comp. Bur. 2014).*

² *Special Access for Price Cap Local Exchange Carriers; AT&T Corporation Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services, Report and Order and Further Notice of Proposed Rulemaking, 27 FCC Rcd. 16,318 (2012).*

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Business Data Services in an Internet Protocol Environment)	WC Docket No. 16-143
)	
Special Access for Price Cap Local Exchange Carriers)	WC Docket No. 05-25
)	

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June 28, 2016

EXECUTIVE SUMMARY

The Commission should not adopt rules in this proceeding that impose new regulatory burdens on Cox and other competitive providers. Rate regulation of competitive providers, like Cox, will impose unnecessary burdens, because Cox has no ability to impose unjust or unreasonable rates so the proposed rules are unjustified and likely harmful to Cox's competitive offerings. In fact, the proposed regulations significantly impact investment decisions in advanced facilities that are providing the alternative services the Commission says it wants to encourage.

Cox comes to this proceeding with significant experience as a competitive provider of innovative communications services, having been among the pioneers in video, competitive telephone, broadband Internet, and competitive commercial telecommunications services. Cox has succeeded in the business services market by offering innovative services, as well as lower prices and higher quality than its competitors. This competitive experience is important in evaluating the potential effects of the proposed rules.

The proposal to regulate cable companies appears to be founded on a fundamental misunderstanding of cable networks. Cox's fiber-based BDS and its limited Ethernet over hybrid fiber-coax ("HFC") service run over separate networks and have substantially different capabilities. Cox has little ability to leverage its HFC plant when deploying fiber to new locations; therefore, Cox faces the same barriers (and opportunities to serve) as CLECs in deploying fiber, including obtaining access to buildings and trenching costs. Cox's fiber-based BDS, which is far from ubiquitous, provides robust performance commitments and very high speeds. Cox's Ethernet over HFC, on the other hand, is provided over the same shared facilities used to provide Cox's mass market voice, video and Internet services, sharply limiting offered

speeds and precluding guarantees of performance. Properly understood, Cox's EoHFC does not fall within the Commission's definition of BDS.

More fundamentally, Cox disagrees with the Commission's assessment that the BDS market is broken. Cox's experience is that the marketplace is highly competitive, with numerous providers willing and able to provide BDS in virtually every market. As a result, Ethernet prices are already declining, which puts pressure on Cox's ability to recover costs of construction. Regulated price reductions would further dampen new facilities deployment. Like any other company, Cox has minimum return requirements for any investment, and manipulating the market with a mandate to lower prices would cause many fiber deployment projects that meet those requirements today to drop below the necessary return. Cox would be faced with the decision of whether to deploy its capital in areas with a more sound financial basis. A mandated price reduction could have a particularly large impact on Cox's participation in the Schools and Libraries and Rural Health Care programs, where today Cox is an important and competitive service provider.

The proposed rules would impose substantial administrative and operational burdens on Cox without any meaningful regulatory or customer benefits. The *Further Notice* proposes ongoing data collections that will replicate and extend the 2013 data collection, which was very expensive and used significant resources that could have been devoted to other purposes. Yet the *Further Notice* does not consider the impacts on Cox and other competitors. Furthermore, the proposal to "benchmark" competitor rates against ILEC price caps would impose enormous compliance burdens for competitive providers, like Cox, that do not price their products like ILECs or that offer services that do not correspond to ILEC services or service areas. The

ongoing costs of these regulations would far exceed any possible benefit to competition or the marketplace and cannot be justified.

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COMMENTS OF COX COMMUNICATIONS, INC.

Cox Communications, Inc. (“Cox”), by its attorneys, hereby submits its comments on the Commission’s *Further Notice* in the above-captioned proceeding.¹

INTRODUCTION

Cox was an early provider of competitive voice, high speed data, and business services, and has invested significantly in fiber and other infrastructure to provide a range of high-capacity services designed to meet the needs of a diverse set of business customers. This experience informs Cox’s perspective on the regulatory regime proposed in the *Further Notice*.

Cox appreciates that the Commission has long struggled with the appropriate level of deregulation of incumbent local exchange carrier special access services, or as they are now called by the Commission, BDS. For more than 20 years, Cox has competed fiercely with incumbents in all of its geographic markets, including having to arbitrate and litigate interconnection agreements to facilitate entry into local markets to provide telecommunications services to mass market and business customers.

¹ *Business Data Services in an Internet Protocol Environment*, WC Docket No. 16-143, Tariff Investigation Order and Further Notice of Proposed Rulemaking, FCC 16-54 (rel. May 2, 2016) (“*Further Notice*”).

Cox, however, does not share the Commission's view that the BDS market is "broken." In its experience, the BDS market is highly competitive, with numerous providers offering services. If anything, competition is already driving Ethernet prices down so precipitously that Cox is finding it harder to justify the costs of new fiber deployment. As another indication of competition in this market, Cox has found numerous alternatives to ILEC provided services where Cox needs to supplement its own facilities-based BDS with another providers' wholesale offering. In fact, the majority, of Cox's Ethernet Type II services are obtained from providers other than incumbent LECs.²

Nevertheless, Cox does rely on incumbent LEC wholesale BDS services and, like many other CLECs, purchases BDS services from the ILECs under tariffs, some of which contain competition-dampening provisions such as shortfall penalties. Cox therefore, appreciates the Commission's efforts in addressing such provisions in the *Tariff Investigation Order*. Cox believes that the elimination of such provisions will enhance its ability to compete more efficiently and looks forward to providing more wholesale services to other carriers as their ability to seek alternatives to incumbent LEC services increases due to the Commission's actions. Cox believes that the *Tariff Investigation Order* goes a long way toward resolving whatever market failures may have existed in the BDS market as a result of any residual incumbent LEC market power. Cox's contracts do not contain the types of provisions the Commission found unreasonable in the *Tariff Investigation Order*, which further shows the disparate approach of the incumbent LECs it competes against.³

² Declaration of Jeremy Bye and Larry Steelman, attached hereto as Exhibit 1 ("Bye Decl."), at ¶ 7.

³ The Commission declared unlawful incumbent LEC tariff pricing plans to the extent they contain "all-or-nothing" provisions, which require customers "to commit all of their relevant in-service purchases, such as DS1 or DS3 channel terminations, to a single pricing plan." It also

Given the Commission’s long-running efforts to promote competition, Cox was surprised to read the proposals in the *Further Notice* asking whether companies like Cox, after making the investment to compete and achieve hard-fought results, should be subject to the same historically-driven regulation that applies to incumbent LEC provision of BDS, tempered only by a redefined notion of what constitutes a competitive market. It is puzzling that the Commission could view Cox as having the ability to control prices in this market to such an extent that its rates would have to be regulated. In light of the great pains the Commission has taken to “do no harm” to growing competition in various communications segments,⁴ it is hard to understand why it would skew so far toward regulation of facilities-based competitors such as Cox in this market.

It appears that the Commission’s proposal to regulate cable companies is based on a core mistaken belief that they may have ubiquitous networks that can be used for high capacity, dedicated services. The Commission seems to believe cable companies’ HFC networks somehow confer the ability on cable companies to offer BDS service, as the Commission defines it, “everywhere they have deployed DOCSIS 3.0.”⁵ In particular, the Commission has suggested that cable company HFC networks could be vital to the deployment of 5G wireless technology and it should, therefore, ensure access to that network at “reasonable” prices.

found unlawful shortfall penalty provisions that allowed the seller to recover from the buyer an amount greater than the amount the buyer would have paid had it met its minimum commitment level. Finally, the Commission declared that early termination fees were unreasonable if they required the buyer to pay more than if it had fulfilled the term commitment. *Further Notice* at ¶¶ 95, 115, 149.

⁴ See, e.g., *Direct Broadcast Satellites*, Report and Order, 90 FCC 2d 676, ¶¶ 78-101 (1982) (adopting a “flexible regulatory approach” for direct broadcast satellite providers and declining to adopt ownership restrictions or access requirements); *Promoting Innovation and Competition in the Provision of Multichannel Video Programming Distribution Services*, Notice of Proposed Rulemaking, 29 FCC Rcd 15995 (2014).

⁵ See, e.g., *Further Notice* at ¶ 221 (“Looking forward, it may already be or soon will be the case that cable companies are able to supply BDS everywhere they have deployed DOCSIS 3.0.”).

It is fortunate that the Commission seeks input on these conclusions because they are simply not borne out by the facts, at least as they apply to Cox’s services. As shown below, Cox’s fiber-based BDS services are far from ubiquitous. Cox has extended fiber to only a fraction of the commercial locations in its markets. With regard to Cox’s Ethernet over HFC (“EoHFC”) service, Cox does not offer service guarantees for this service and thus it would not qualify as BDS under the Commission’s proposed definition. In any event, Cox’s EoHFC is not viewed by Cox’s customers as a viable alternative to fiber (or legacy TDM services) for many business applications or for cell site backhaul. The *Further Notice* itself recounts various instances where CLECs or wireless carriers, such as Sprint, explain that EoHFC is a “poor substitute” for fiber-based BDS services and is not a viable BDS product.⁶ Yet, the Commission seems intent on regulating EoHFC services, in addition to cable’s fiber-based BDS, finding incongruently from the record that “[p]acket-based BDS, including over HFC, is a good substitute for TDM BDS”⁷ and proposing to include Ethernet over HFC in the BDS product market.⁸

Apart from the Commission’s erroneous assumptions regarding cables’ networks, the proposed regulations would impose substantial burdens that could harm the currently

⁶ See, e.g., *Further Notice* at ¶ 202 (“Sprint, for example, describes Ethernet over HFC as a poor substitute for fiber-based services.”); *id.* at n. 495 (stating that “‘while the cable companies’ Ethernet-over-fiber and DSn-over-fiber services are competitive with Level 3’s dedicated services, the cable companies’ best efforts broadband Internet access and their Ethernet-over-HFC services generally are not competitive with Level 3’s dedicated services’ [because] ‘most of Level 3’s customers do not view these services as sufficient to meet their needs’”) (quoting Comments of Birch Communications, BT Americas Inc., EarthLink, Inc., and Level 3 Communications, LLC, WC Docket No. 05-25, RM-10593 (filed Jan. 27, 2016) at 16, 18) (“Joint CLEC Comments”).

⁷ *Further Notice* at ¶ 160.

⁸ *Further Notice* at ¶ 189 (stating that EoHFC “have characteristics of BDS carried over fiber: it can be used to provide access to the Internet and point-to-point communications (such as a virtual private network); it is generally available at symmetric bandwidths up to 10 Mbps; and is often supplied with *service reliability guarantees*”) (emphasis added).

competitive market. The regulations would have no beneficial effect because Cox has no ability to impose unjust or unreasonable prices for BDS. It makes no sense to impose regulations designed to prevent Cox from doing what it is incapable of doing – imposing unjust and unreasonable rates – given its position in the market. Moreover, the imposition of “benchmark” rates would cause Cox to more closely scrutinize the extent to which it will invest in new fiber facilities, which would hurt not only Cox but the market in general. Cox is particularly concerned about its ability to continue to proffer competitive bids for E-rate participants should the Commission adopt substantial price cuts. Price regulation of Ethernet in general seems unnecessary given that prices already respond to competitive pressures and Ethernet prices are declining. Finally, the proposed regulations, including proposed future data collections and the requirements associated with rate regulation, such as maintaining public price lists, would impose costly and time consuming administrative burdens on Cox. For these reasons, the Commission should not impose regulation on cable companies such as Cox.

I. Cox Has Competed Aggressively for Business Customers.

Cox was one of the first cable operators to enter the business services market, part of its long legacy of pioneering new services offered over its cable facilities, and it has pursued the business services market aggressively for many years. Cox’s presence in the business services market has been beneficial to its customers and to competition, and Cox has significantly expanded its fiber footprint over time, even as it faced many of the same barriers as other CLECs. Today, Cox provides service in 18 states and serves 23 markets.⁹

⁹ Bye Decl. at ¶ 4.

A. Cox Has a History of Pioneering and Investing in Innovative Services.

Cox's history as a pioneer in offering new services is well known to the Commission. Cox entered the cable business more than 50 years ago, and since that time has added voice services, broadband Internet access, business services and home monitoring services to its portfolio of offerings. Cox first entered the business services market in 1993, even before the Telecommunications Act of 1996, through services provided in the Norfolk market.¹⁰ Soon after the 1996 Act, Cox became the first cable operator to offer voice, video, and data services to business customers.¹¹

Since that time, Cox has won numerous awards for the quality of its services and now serves more than 6 million residential and business customers.¹² Cox now serves more than [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] business customers with shared capacity Internet service, Voice, and Video services. Cox serves more than [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] locations with dedicated point-to-point services (services the *Further Notice* describes as "BDS"). Cox provides the vast majority of its BDS over its own fiber facilities. To the extent it relies on BDS from other providers (known as Type II services), Cox has found that there are wholesale alternatives to the incumbent LECs, which provide less than half of Cox's Type II Ethernet services.¹³ Cox offers a variety of high-capacity services to its business customers, including TDM-based DS1s and DS3s, [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

¹⁰ Bye Decl. at ¶ 5.

¹¹ Bye Decl. at ¶ 5.

¹² Bye Decl. at ¶ 5.

¹³ Bye Decl. at ¶ 7.

¹⁴ Bye Decl. at ¶ 7.

To provide its business services Cox has, over the past 10 years, invested more than [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] in fiber facilities and electronics for delivery of high speed data and voice services to commercial customers with [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] invested to serve business customers just since the Commission's special access data collection in 2013.¹⁵ Cox anticipates that it will continue to increase its investment going forward, assuming it does not become subject to rate regulation and other proposals set forth in the *Further Notice*.¹⁶

The investment Cox has made has resulted in an increase of more than [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] new locations since the 2013 data collection to which Cox has deployed fiber connections. Cox today serves a total of [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] locations with fiber, up from [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] fiber-connections reported in the 2013 data collection.¹⁷ It aggressively seeks out new opportunities to deploy fiber to serve new customers, opportunities that exist only if reachable with the exercise of sound financial discipline. The investment is reflected in increased revenue as well. Cox earned approximately [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] in annual revenue from its BDS services in 2015 and projects earnings of [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] for 2016, up from [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]

¹⁵ Bye Decl. at ¶ 14.

¹⁶ Declaration of Ken Shelton, attached hereto as Exhibit 2 ("Shelton Decl.") at ¶ 11.

¹⁷ Cox reported a total of [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] locations in response to the 2013 data collection, but this included UNE and EoHFC locations as well locations connected with Cox fiber.

[END HIGHLY CONFIDENTIAL] in 2013. The number of business accounts Cox serves has been growing at an average rate of [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL] Cox projects continued revenue growth in this area.¹⁸ [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY
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B. Cox Has Benefitted Business Customers by Offering Lower Prices, Innovative Services, and Higher Quality Products.

Cox's success in the business market is based on its ability to differentiate its services from those of other providers in the key areas that matter to customers – price, quality, and customer care. As a provider competing against an incumbent LEC in every market where it provides service, Cox must offer customers a better value proposition to succeed. The extent to which Cox has succeeded in providing better, cheaper, and more responsive services is reflected both in its overall growth and in its ability to earn business in specific market segments. For instance, Cox services provide crucial redundancy to federal government and military customers.²⁰

Cox has been a leader in providing Ethernet services. It was the first cable company to be listed on Vertical Systems Group's first tier of Ethernet providers. Cox has also been a leader in providing innovative services that ride over the Ethernet connection, such as managed IP voice and unified communications services that provide substantial efficiencies for business operations. Indeed, one of the challenges that Cox faces is the increasing competition from other

¹⁸ Bye Decl. at ¶ 15.

¹⁹ Bye Decl. at ¶ 15.

²⁰ Declaration of Jeffrey Finkelstein, attached hereto as Exhibit 3 ("Finkelstein Decl.") at ¶ 20.

providers of managed services. When BDS customers use other providers rather than Cox for the managed services that ride over the top of the BDS connection, Cox loses potential revenue opportunities that otherwise would offset the costs of deploying the connection to the customer's location.²¹ Cox must then recoup its capital investment solely from the price of the BDS connection.

II. Cox's Fiber Based BDS and Ethernet Over HFC Services Are Completely Different.

Cox provides services to business customers over both its fiber network and its hybrid fiber coaxial (HFC) network. These networks are completely separate and offer distinctly different types of services. Cox's fiber based services are true dedicated services with robust performance guarantees and speeds up to 10 Gbps. Cox offers both TDM and Ethernet services over its fiber plant, but increasingly customers want Ethernet services because they are more efficient, highly scalable, and less costly. Cox offers both retail and wholesale service over fiber.

Cox's Ethernet over HFC service, by contrast, is offered over the same shared network used to provide Cox's voice, video, and Internet access services to its mass market customers. The HFC network has a limited capacity that must be shared among all of its users, which in turn restricts the capacity that can be "dedicated" for symmetrical EoHFC services. Cox sells a very limited amount of EoHFC and its maximum symmetrical speed is 10 Mbps.²² The shared nature of the network underlying the EoHFC service also precludes Cox from offering performance guarantees, an essential characteristic of the Commission's definition of BDS service.

Neither Cox's fiber network nor its HFC network is ubiquitous for purposes of BDS service. While Cox has made substantial investment in its fiber network, it still only serves a

²¹ Shelton Decl. at ¶ 12.

²² [BEGIN HIGHLY CONFIDENTIAL]

[CONFIDENTIAL] Finkelstein Decl. at ¶ 13.

[END HIGHLY

fraction of commercial locations. The HFC network is also not ubiquitous, for purposes of assessing the need to regulate Cox's BDS services, but for different reasons. For one, the HFC network is still overwhelmingly located in residential areas. But more importantly, the Ethernet service it offers over the HFC network is not BDS service. The distinctions between the BDS services provided over Cox's fiber network and the Ethernet service offered over the HFC network are more fully explained below. The Commission should recognize these differences when it views competition in the BDS market.

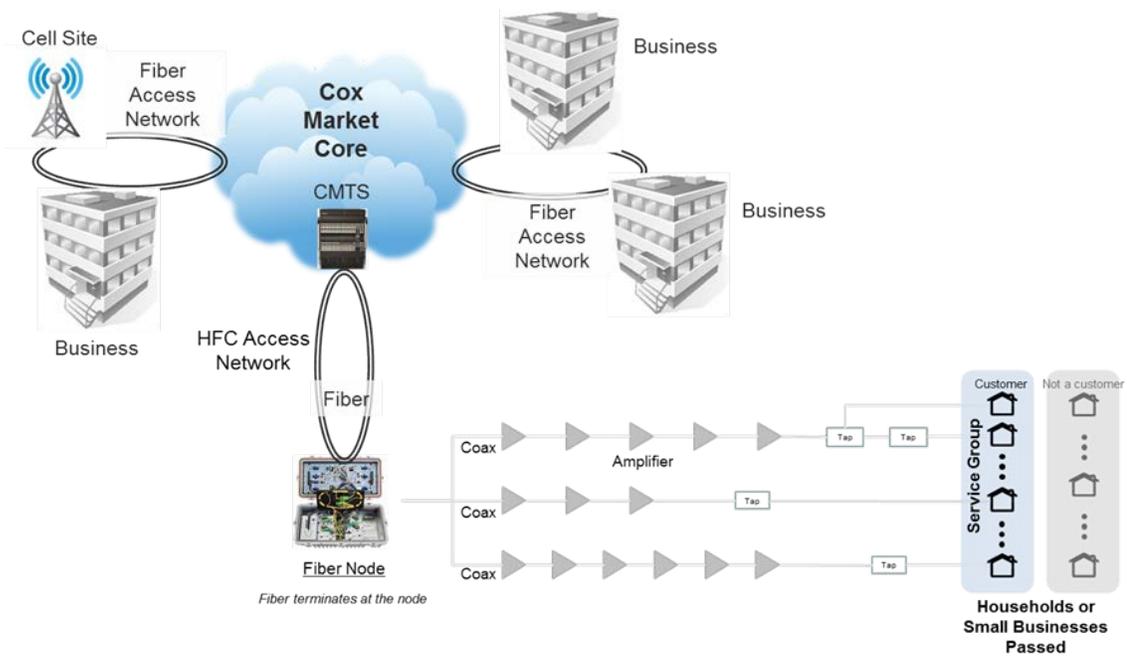
A. Cox's Fiber Network Is Separate from Its HFC Network and Cox Faces the Same Barriers to Fiber Deployment as Any Other CLEC.

Cox provides retail fiber-based BDS to thousands of individual businesses, governmental agencies, schools, and health care facilities. Cox also leases wholesale, fiber-based BDS services to over a [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] other carriers.²³ Wireless carriers are a significant and growing customer segment for Cox. Cox is eager to compete for this backhaul business and routinely responds to RFPs from wireless providers. Cox currently provides backhaul services to every major wireless provider and a number of smaller wireless companies as well.

The fiber that Cox deploys for BDS is a separate network from its HFC network and it is far from ubiquitously deployed in any Cox market – the fiber network is an overlay, not an extension of Cox's HFC plant. The diagram below depicts the separate nature of Cox's fiber-based network used for BDS and its HFC network used to provide mass market Internet, voice and video. Although the two networks utilize Cox's core MPLS network, they require separate construction, operation and maintenance and Cox has made substantial capital expenditure to create a fiber network for business and cell site backhaul.

²³ Bye Decl. at ¶ 9.

Figure 1 – Cox’s Separate Fiber and HFC Access Networks²⁴



As a consequence, although Cox has extensive HFC plant and fiber in the core portions of its network, it still must construct significant amounts of fiber to reach customer locations to provide BDS services. Cox thus has limited ability to leverage its HFC network to provide dedicated, point-to-point service over newly deployed fiber facilities, which typically do not follow the same routes as HFC plant.²⁵ Therefore, when Cox makes decisions about whether to deploy additional fiber, it must overcome the same barriers as any other competitive provider.²⁶ Specifically Cox must ensure that the costs of extending its fiber network, which often include the costs of trenching to the building, can be recovered by the potential financial benefits of the deployment. These costs cannot be “shared” as common plant with the HFC network and must be recovered from the specific revenue opportunity that results from the fiber extension.

²⁴ Finkelstein Decl. at ¶ 21, Figure 3.

²⁵ Finkelstein Decl. at ¶ 21.

²⁶ Shelton Decl. at ¶ 8.

Like any other business, when Cox decides whether to make capital expenditures it evaluates that decision in terms of the potential return. The potential return not only is used to determine what projects to prioritize, but also to decide generally whether a project is worth considering, using an internal rate of return (“IRR”) or hurdle rate. Cox uses the same hurdle rate and applies the same engineering/economic analysis when deciding to deploy new fiber or to extend its HFC plant.²⁷

Broadly speaking, when Cox evaluates a fiber deployment, the key factors in determining whether to proceed with a project are the expected revenues and the cost of deployment, most of which comes in the form of capital expenditures necessary to deploy the fiber.²⁸ In many cases, nearly [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] of the time, Cox does not have conduit that extends to the customer location and aerial provisioning is not viable, so Cox therefore must trench to extend the fiber to that location.²⁹ This construction is typically the largest cost component of extending the network.³⁰ These costs also vary dramatically among the different Cox markets. Costs are typically far higher on a per mile basis in urban areas but also depend on geography, soil characteristics and a host of factors. Construction costs per mile for Cox markets vary from a high of about [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] per mile in Las Vegas to around [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]

²⁷ Shelton Decl. at ¶ 3.

²⁸ Shelton Decl. at ¶¶ 3-12.

²⁹ Shelton Decl. at ¶ 10.

³⁰ The vast majority of Cox’s network capital expenditure, about [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL], is for the access part of the network, which includes outside plant, edge facilities (head ends with CMTS and Optical Line Termination (OLT routers) and customer premises equipment. Finkelstein Decl. at ¶ 4.

per mile in parts of Louisiana, Florida and Georgia.³¹ Because of costs to deploy fiber to new locations, Cox does not have anything close to a ubiquitous fiber network.

Increasingly, market-driven price declines for Ethernet services are making it more difficult to justify fiber builds, resulting in more projects being rejected or requiring the customer to pay more of the construction costs and/or agreeing to much longer service terms, such as 6 or 8 years. Effectively agreeing to longer service terms allows Cox to extend the time it is able to wait for the return on its investment.³² In addition to declining prices, Cox finds that an increasing number of its business customers are turning to other providers of IP-based voice and managed services that run over the top of their Internet connection, further pressuring the revenue that could be used to recoup construction costs.³³ When Cox does not provide these “add-on” services, it must recover its costs solely from the price of BDS transport connection. Further pricing pressure is being created by the increased use of dark fiber providers, especially by wireless companies, and by the fiber deployment using broadband stimulus funding.³⁴

The decisions Cox must make when deploying fiber are the same decisions faced by any CLEC in the BDS market. Because it does not have a ubiquitous fiber network, Cox must decide where to invest and whether the investment will produce a sufficient return to justify the risk and cost. Despite these considerations, and as described above, Cox has invested billions of dollars in deploying fiber across its network so that it could serve business customers, and continues to do so.

³¹ Shelton Decl. at ¶ 10, Table 1.

³² Shelton Decl. at ¶ 13.

³³ Shelton Decl. at ¶ 13.

³⁴ See also *infra* Section IV.C (discussing declining prices in BDS market).

B. Ethernet over HFC Is Provided over a Shared Network and Does Not Provide True BDS Services.

Cox's HFC network provides Voice, Video, and broadband services to all of its mass customers. It also supports the provision of the Voice, Video, and/or best efforts business Internet service to approximately [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] commercial customers. Cox utilizes this same network to provide a very limited retail and wholesale Ethernet over HFC service. It currently provides retail EoHFC to approximately [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] locations at speeds at or above 1.5 Mbps. This represents approximately [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] of the commercial locations connected to Cox's Metro-Ethernet capable headends that Cox has identified as serviceable using EoHFC.³⁵ The maximum speed offered for EoHFC service is 10 Mbps. [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

Cox also offers EoHFC as a wholesale service to other carriers that purchase Cox's wholesale fiber-based BDS services. This is a relatively new offering. The Wholesale EoHFC product also is capped at 10 Mbps symmetrical speeds and is used as a gap filler by incumbent LECs and other carriers to extend off-net services to locations requiring more limited capacity and that do not need robust performance standards. Another limitation of EoHFC, one specifically noted by some CLECs as rendering HFC unusable for real time functionality, is that

³⁵ Bye Decl. at ¶ 8.

³⁶ Bye Decl. at ¶ 12.

it does not meet the Metro Ethernet Forum's standard for Maximum Transmission Units ("MTUs") because its MTUs are too small.³⁷

[BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

³⁷ Finkelstein Decl. ¶ 14. *See also* Declaration of Chris McReynolds on Behalf of Level 3 Communications, LLC at 10 (dated Jan. 21, 2016) (*attached to* Joint CLEC Comments).

³⁸ **[BEGIN HIGHLY CONFIDENTIAL]**

CONFIDENTIAL]

[END HIGHLY

The stark differences between quality of fiber and HFC services is reflected in their prices. [BEGIN HIGHLY CONFIDENTIAL]

[END

HIGHLY CONFIDENTIAL]

Notwithstanding the Commission's proposal to include EoHFC in the BDS product market,⁴⁰ the lack of performance guarantees renders the service outside the product definition. The Commission defines BDS as dedicated transport with "prescribed performance *requirements* that typically include bandwidth, reliability, latency, jitter, and/or packet loss."⁴¹ The Commission specifically distinguishes BDS from best efforts on the former's promises of "guaranteed" performance.⁴² The Commission's assertion that EoHFC "is often supplied with service reliability guarantees"⁴³ is flatly wrong, at least with respect to Cox's EoHFC offerings.

Indeed EoHFC is much more akin to the best effort Internet services that the Commission correctly excludes from the market and that is provided over the same shared HFC network. The Commission defines best effort as service "shared among multiple users absent service guarantees, and is subject to failure during congestion period." These are characteristics of EoHFC. As described in the declaration of Jeffrey Finkelstein, the extent to which Cox can comfortably provide EoHFC services is very much affected by the need to manage the overall

³⁹ [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

Further Notice at ¶ 189.

⁴¹ *Further Notice* at ¶ 279 (emphasis added).

⁴² See *Further Notice* at ¶ 12 ("BDS refers to the dedicated point-to-point data at certain guaranteed speeds and service levels"); *id.* at ¶ 14 ("With BDS, the purchaser is guaranteed an open connection to transmit data at a set performance level and speed.").

⁴³ *Further Notice* at ¶ 189.

bandwidth of the HFC network made available for broadband services and which is predominantly used for mass market best efforts asymmetric broadband service.⁴⁴

Like all providers, Cox must carefully gauge the penetration of its broadband speed tiers so as to ensure optimal performance for best efforts services at peak times and to prevent network congestion from adversely affecting the broadband speeds customers have purchased. The more “dedicated” bandwidth is sold as EoHFC, the less bandwidth “headroom” is available for all of the mass market and small businesses sharing the network and who generate substantially more revenue than EoHFC services. The need to manage bandwidth is particularly acute in the upstream direction where capacity is much more limited than downstream.⁴⁵ In other words, EoHFC entails offering a symmetrical service within an asymmetrically designed network. Expanding the amount of shared capacity is an expensive and time consuming process, as explained in Mr. Finkelstein’s declaration.⁴⁶

The discussion above assumes that the business location already has an HFC connection. Often times, however, the business is not connected to the HFC network at all and some construction is needed to extend the coaxial cable to the location. This too incurs construction

⁴⁴ Finkelstein Decl. at ¶ 10.

⁴⁵ The HFC network consists of a fiber feeder extending from the head end to a node in the field. Beyond the node, coaxial cable branches out to individual customer locations. The number of customers served by a single node is called the Service Group, and all of the customers in the Service Group must share the available capacity at the node. **[BEGIN HIGHLY CONFIDENTIAL]**

[END

HIGHLY CONFIDENTIAL] Finkelstein Decl. ¶ 8.

⁴⁶ One way to increase available shared capacity is to establish a new node to serve the Service Group, effectively creating two smaller Service Groups. This is called splitting the node and may involve deploying new fiber into the neighborhood. Average costs for creating new node are about **[BEGIN HIGHLY CONFIDENTIAL**

[END HIGHLY CONFIDENTIAL]. It would never be cost effective to undertake this expense just to add a few EoHFC customers. Finkelstein Decl. at ¶ 9.

costs and, as noted, Cox applies the same hurdle rate. Given the low prices of EoHFC service, construction costs must be exceedingly low in order for the build to pass the hurdle rate. Using the Las Vegas market as an example, a customer willing to commit to three-year term for 1.5, 3, or 5 Mbps EoHFC service would not pass Cox's hurdle rate once construction costs exceed

[BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]⁴⁷

Further, there is little likelihood that expected service upgrades, including the deployment of DOCSIS 3.1 will make a difference. DOCSIS 3.1 remains a shared network service, and Cox does not plan to convert performance objectives to credit-backed guarantees or commitments. The primary driver for the DOCSIS 3.1 rollout, which Cox will stage over the next several years, is to provide superfast Internet access to its residential customers. **[BEGIN HIGHLY**

CONFIDENTIAL]

[END

HIGHLY CONFIDENTIAL] These are not expenditures that would be made in conjunction with case-by-case assessments of business service opportunities.

Nor would it be accurate for the Commission to view EoHFC as a source of backhaul for the next generation of wireless services, 5G. The limitations described above render it wholly unsuitable for purposes of backhauling the large volume of data promised for 5G technology. Indeed, Cox's EoHFC product is not used today for wireless backhaul, which today requires speeds in excess of 50 Mbps, far faster than is available with EoHFC. **[BEGIN HIGHLY**

⁴⁷ Shelton Decl. at ¶ 4.

⁴⁸ Finkelstein Decl. at ¶¶ 16-19.

CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL] In addition to still not offering sufficient performance, Cox often does not have plant in areas where cell sites are deployed. DOCSIS 3.1 does nothing to remedy these limitations. Cell site backhaul increasingly is a fiber-based product, which provides the requisite bandwidth and performance needed by wireless carriers.

III. Cox Has No Ability to Impose Unjust or Unreasonable BDS Prices.

Commission precedent establishes that rate regulation cannot be justified unless the Commission can find that a provider has market power, which the Commission defines as the ability to control price.⁵⁰ The Commission has long held that competitive providers have no ability to impose unjust or unreasonable rates.⁵¹ Cox, like all competitive BDS providers, lacks the ability to impose such rates because if it attempts to assess rates higher than the dominant

⁴⁹ Finkelstein Decl. at ¶ 20.

⁵⁰ *Competitive Common Carrier Services (Fourth R/O)*, 95 FCC 554, 558 ¶¶ 7-8 (1983).

⁵¹ *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, Notice of Proposed Rulemaking, 77 FCC 2d 308 (1979); *Competitive Common Carrier Services (Classification of Carriers)*, First Report and Order, 85 FCC 2d 1 (1980); *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, Further Notice of Proposed Rulemaking, 84 FCC 2d 445 (1981); *Competitive Common Carrier Services*, Second Further Notice of Proposed Rulemaking, FCC 82-187, 47 Fed. Reg. 17308 (1982); *Competitive Common Carrier Services (Resale Deregulation)*, Second Report and Order, 91 FCC 2d 59 (1982); *Competitive Common Carrier Services (Reconsideration Order)*, Order on Reconsideration, 93 FCC 2d 54 (1983); *Competitive Common Carrier Services*, Third Further Notice of Proposed Rulemaking, 48 Fed. Reg. 28292 (1983); *Competitive Common Carrier Services*, Third Report and Order, 48 Fed. Reg. 46791 (1983); *Competitive Common Carrier Services (Fourth R/O)*, Fourth Report and Order, 95 FCC 2d 554 (1983), *vacated by* AT&T v. F.C.C., 978 F2d 727 (D.C. Cir. 1992), *cert. denied*, MCI Telecommunications Corp. v. AT&T, 113 S Ct 3020 (1993); *Competitive Common Carrier Services*, Fourth Further Notice of Proposed Rulemaking, 96 FCC 2d 1191 (1984); *Competitive Common Carrier Services (Fifth R/O)*, Fifth Report and Order, 98 FCC 2d 1191 (1984); *Competitive Common Carrier Services (Sixth R/O)*, Sixth Report and Order, 99 FCC 2d 1020 (1985), *vacated by* MCI Telecommunications Corp. v. F.C.C., 765 F2d 1186 (D.C. Cir. 1985).

provider, the ILEC, the customer could always go back to the ILEC. In fact, Cox is constrained to charge rates that generally are lower than those charged by incumbent LECs and other CLECs, which provide substantial competition. Cox pricing is also constrained by the customers it serves, which are largely sophisticated customers, including wireless carriers that are well aware of the existence of competitive alternatives.

First, Cox's prices are constrained by competition from incumbent LECs and other CLECs. In every market where Cox operates, it faces competition from the incumbent LEC across all of its business services, and Cox often faces competition from other CLECs as well. To compete successfully against those companies, Cox typically offers rates that are lower than incumbent LEC rates for comparable services. When responding to RFPs, Cox (like other providers) has strong incentives to offer the lowest rates it can, and often underprices the incumbent LEC, even when Cox has to undertake new construction. These pricing strategies are necessary to obtain business in competition with entrenched incumbents and other CLECs seeking to gain market share.

The pressure on Cox's pricing is increased by the presence of a substantial number of other CLECs in Cox's markets. The companies with which Cox competes in its various markets, in addition to the major incumbent LEC, include: Southern Light, Light Tower, XO, Level3, Windstream, Lumos, Zayo, Telepacific, Florida P&L, Birch, Hunt Telecommunications, and Eatel. Some of these competitors, including Level 3 and XO Communications, have sophisticated, national networks, and substantial capital resources that are devoted in large part

to providing business services.⁵² Other providers have extensive local networks that enable them to compete effectively in individual markets.

Cox's rates also are constrained by the customers it serves for BDS, which typically are large, sophisticated parties. This is particularly true in the wireless backhaul market, where the customers often are larger than Cox and have sufficient capital and expertise to consider self-deployment as an alternative to purchasing service from a third party. Like wireless providers, many of Cox's other customers expect providers to bid through RFPs, rather than engaging in individual negotiations, which puts pressure on pricing, to the benefit of the customer.⁵³

IV. The Proposed Regulations Could Impact BDS Investment Decisions.

There is little question that some of the proposals in the *Further Notice*, including setting benchmarks to apply to all providers in "non-competitive" markets, could have an adverse effect on investment in BDS, particularly by competitive providers. It is important for the Commission to understand the full extent of that impact.

A. Forced Price Reductions Could Preclude Cox From Meeting Its Required Rate of Return for Fiber Deployment.

The *Further Notice* proposes to benchmark Ethernet rates, potentially including Ethernet services provided by cable companies, to incumbent LEC price caps for DS1 and DS3 services on a per megabit basis.⁵⁴ The Commission also proposes to cut those incumbent LEC price cap rates by as much 21 percent and potentially reduce them annually via a to-be-determined productivity factor.⁵⁵ Cuts of this magnitude could reduce Cox's revenue to the point where

⁵² XO also is in the process of being acquired by Verizon, which will greatly increase the capital resources it has available.

⁵³ Indeed, a significant percentage of Cox's BDS business is with E-rate customers, which are required to seek competitive bids by the Commission's rules. 47 C.F.R. § 54.503; Bye Decl. at ¶¶ 16-18.

⁵⁴ *Further Notice* at ¶ 423.

⁵⁵ *Further Notice* at ¶¶ 407-417.

construction would no longer be viable on some projects, especially those borderline projects where there is already risk that Cox will not recoup its investment. Reductions as low as 5 percent in the rates Cox can charge would cause some projects that today meet Cox's hurdle rate to have prospective returns below that rate.⁵⁶ This potential impact to fiber deployment is to the long-term detriment of Cox's customers and the customers they serve.

Moreover, the proposed regulation of Cox's BDS pricing increases the overall risk that required returns will not materialize. Every decision to deploy fiber entails risks – there is risk in the construction cost estimates, risk in the speculative assumptions about service demand, risk in the ongoing operating cost of a particular network, and risk in keeping a customer for the expected duration of the contract. The pricing uncertainty introduced by this proceeding erodes the confidence that Cox historically has exhibited regarding the likelihood it will achieve a positive return on investment.

B. The Commission's Proposals Could Reduce Cox's Provision of BDS to Schools, Libraries and Rural Health Care Facilities Participating in the E-Rate Program.

Rate reductions could have a particularly adverse impact on Cox's willingness and ability to bid on E-rate contracts. Cox is a longstanding participant in the E-rate program, and today provides BDS to more than [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] schools [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL] as well as libraries, and supported health care facilities.⁵⁷ E-rate contracts are particularly significant because they are awarded in response to RFPs and Cox almost always faces competition for those contracts, not just from incumbent LECs, but also from other large providers and much smaller local entities that are

⁵⁶ Bye Decl. at ¶ 20.

⁵⁷ Bye Decl. at ¶ 26.

willing to build fiber in response to an RFP and the income stream it represents. This competition – and even the threat of others bidding – drives down prices offered by Cox and other bidders.

For example, in the past two years, **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]

One of the potential adverse consequences that the Commission must carefully assess is the impact of its proposed regulation of cable companies and other participants in the E-Rate program. Proposing to impose rate regulation and forced sharing of facilities that companies like Cox construct to provide high capacity services to schools and libraries will undermine the incentive to take on these projects, and schools, libraries and rural health care facilities will suffer as a consequence.

To take but one example, under the E-Rate program, Cox provides BDS services to the Gilbert school system in Phoenix, Arizona. **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] Had lower rates been mandated, Cox could not have provided these services to the school.

⁵⁸ Bye Decl. at ¶ 26.

C. The Marketplace Already Produces Competitive Pricing.

In every market Cox serves, Cox is witnessing declining Ethernet pricing due to competitive pressures. Overall, Cox has seen Ethernet prices **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** or more between 2012 and 2016, as reflected in the following table of wholesale Ethernet rates in four of Cox's markets.⁵⁹ **[BEGIN HIGHLY CONFIDENTIAL]**

⁵⁹ Shelton Decl. at ¶ 14.

[END HIGHLY CONFIDENTIAL] Further evidence of price declines is provided in the following chart that shows that Cox's average monthly recurring charges per megabit for its fiber-based Ethernet services have declined by some **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] As noted, these price declines are already putting pressure on Cox's ability to pass its hurdle rate for new construction. This trend, along with the trend of customers shopping for alternatives for over-the-top IP-based managed services, provides every indication that the revenue projections that Cox has historically made will continue to moderate.

With price erosion already happening in the market, caused by natural competition and customer technology alternatives, Cox's management team has to further scrutinize its plant

⁶⁰ Shelton Decl. at ¶ 15.

extension policy. Cox will continue to build out where it makes economic sense. However, the pricing environment introduced by this rulemaking increases the risk in the marketplace and Cox will respond to that by being more cautious in the use of the limited capital available.⁶¹

V. The Proposed Rules Would Impose Substantial Costs on Cox and Harm the Currently Competitive Market.

The direct impact on investment in fiber and BDS generally is not the only cost that the proposed rules would impose on Cox. The proposals for ongoing data collections and for benchmarking would create significant burdens for Cox and other BDS providers, without any corresponding benefits.

A. The *Further Notice* Does Not Adequately Consider the Impacts of Ongoing Data Collection Requirements.

The *Further Notice* proposes to monitor BDS through a series of future data collections.⁶² The Commission should not adopt this proposal because ongoing data collection would be unreasonably burdensome.

The data collection that led to the *Further Notice* required an unprecedented effort by the entire telecommunications industry that imposed significant financial and resource burdens on all of the companies that were required to respond. In Cox's case, responding to the data request involved virtually every element of the Cox business service operation, ranging from regulatory and legal to technology to billing and revenue assurance.⁶³ The data collection required Cox not only to collect the data across 23 markets and seven distinct databases, but to put it into new formats that complied with the Commission's requirements.⁶⁴ Cox estimates that it spent approximately [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY

⁶¹ Shelton Decl. at ¶ 16.

⁶² *Further Notice* at ¶ 524.

⁶³ Bye Decl. at ¶ 30.

⁶⁴ Bye Decl. at ¶ 30.

CONFIDENTIAL] in external and internal labor costs on the data collection, an estimate that does not account for the other projects that the individuals involved in the data collection could have undertaken instead.⁶⁵

The *Further Notice* proposes a requirement that BDS providers undertake a similar data collection every three years, consisting of much of the same data compiled in the 2013 collection and a wide range of additional information on BDS offerings, marketing, customers, competitive assessments, and sales of leased lines. Cox's estimate is that it would cost at least as much to respond under the new rule as under the 2013 data collection and most likely given the additional areas for proposed collection, the costs would exceed those for the 2013 data collection.⁶⁶

This cost, multiplied across the entire industry, is excessive and highly burdensome. It is particularly burdensome for competitive providers, like Cox, that lack market power and the ability to charge unreasonable rates, and therefore are not the appropriate targets of rate regulation. They would, in essence, be bearing the cost of regulating the dominant providers in the market, which would be an extraordinary shift in the burden of regulation. As a consequence, the Commission should either reject the proposal for new data collections or modify it in such a way that it does not impose any meaningful burden on competitive providers.

B. The Proposal to Benchmark Competitors' Rates to ILEC Offerings and to Require Conforming Rates to Be Posted Publically Would Create Substantial Administrative Burdens That Would Harm the BDS Market.

The *Further Notice* proposes a rate regulation regime that would require competitive BDS providers in "non-competitive" markets to adopt ILEC rates as benchmarks⁶⁷ and to post conforming rates publically.⁶⁸ This proposal is both unnecessary and unreasonably burdensome.

⁶⁵ Bye Decl. at ¶ 30.

⁶⁶ Bye Decl. at ¶ 31.

⁶⁷ *Further Notice* at ¶ 422.

⁶⁸ *Further Notice* at ¶ 436.

First, for the reasons described above, there is no justification for the Commission to impose any form of rate regulation on competitive carriers in markets where there is an incumbent LEC.⁶⁹ Competitive carriers are unable to charge unjust and unreasonable rates because they are forced to compete against the prices offered by incumbents subject to rate regulation. As the Commission noted in its first *Competitive Carrier* decision: “[W]e can predict with confidence that the rates charged by non-dominant carriers will be ‘just and reasonable’ within the meaning of the Communications Act”⁷⁰

Second, the rate regulation regime proposed in the *Further Notice* would be unreasonably burdensome, particularly given that it will have no beneficial effect. Competitors would be required to monitor their rates and attempt to conform them to the benchmarks. This could require changes in rate structures to match the way the benchmarks are designed. It is also likely that Cox would have to incur the cost of developing an entire new web portal, potentially at a cost of millions of dollars so that its personnel and others could respond to pricing questions in a way that correctly matches prices to the relevant geographic area of the competing ILEC.⁷¹ Moreover, the possibility of a patchwork of different rates based on whether an area is competitive or non-competitive would make it extremely difficult to work with multi-location customers and devise rational pricing plans. Competitors also would have to maintain accurate public postings of their rates, which in the context of rapidly changing markets would require substantial resources that could be devoted to other tasks such as providing superior service to customers.

⁶⁹ See *supra* Section III.

⁷⁰ See *Competitive Common Carrier Services (Classification of Carriers)*, First Report and Order, 85 FCC 2d 1 ¶ 51 (1980).

⁷¹ Bye Decl. at ¶¶ 32-36.

Imposing such requirements would be contrary to longstanding Commission precedent that recognizes that imposing regulatory costs on competitive carriers is wasteful and counterproductive. Perhaps most relevant, the Commission engaged in a decade-long effort to permit detariffing of competitive carrier services because it recognized that there was no benefit to requiring tariff filings.⁷² The same analysis applies to the benchmarking proposal: It would create no benefit while imposing substantial costs on competitive carriers. Consequently, it should be rejected as unreasonably burdensome.

CONCLUSION

For all of these reasons, the Commission should not adopt the rules proposed in the *Further Notice*, and instead should adopt rules consistent with these comments.

Respectfully submitted,

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June 28, 2016

⁷² This effort took the Commission all the way to the Supreme Court, and ultimately was successful when Congress gave the Commission the authority to forbear from applying Title II requirements when it determines that those requirements no longer are necessary. *See MCI WorldCom v. FCC*, 209 F.3d 760 (D.C. Cir. 2000) (recounting history of detariffing efforts and upholding mandatory detariffing order under forbearance authority).

REDACTED - FOR PUBLIC INSPECTION

Exhibit 1

Declaration of Jeremy Bye and Larry Steelman

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Business Data Services in an Internet Protocol Environment)	WC Docket No. 16-143
)	
Special Access for Price Cap Local Exchange Carriers)	WC Docket No. 05-25

DECLARATION OF JEREMY BYE AND LARRY STEELMAN

June 27, 2016

Qualifications

1. My name is Jeremy Bye, I am Vice President – Carrier, for Cox Business (“Cox”) and I have been with Cox for 14 years. My responsibilities include leading Cox’s wholesale sales to wireline and wireless carriers for all of Cox’s markets as well as sales engineering. I have overall responsibility for wholesale operations, including carrier billing and service management. My prior experience with Cox includes network operations, field construction, and business service delivery in Cox’s Virginia markets, and carrier access in Cox’s New England markets. Before joining Cox, I worked for NYNEX/Bell Atlantic in engineering, construction, and operations leadership positions. I have a Bachelor of Arts from Colgate University and an MBA from NYU Stern School of Business.
2. My name is Larry Steelman, I am Vice President for Sales Channels and Programs at Cox. My major responsibilities include leading the national accounts teams for retail sales, including government and educational institution sales. My operational responsibilities include leadership roles in sales strategy, training and compensation. I have been with Cox for six years.

My prior experience includes 18 years with BellSouth/AT&T in sales, sales leadership and sales operations roles.

Introduction

3. We are submitting this declaration on behalf of Cox in the above captioned matter for purposes of describing: (1) Cox's history of providing business data services and its significant growth in the market; (2) Cox's primarily fiber-based retail and wholesale services and the potential effects of the proposed FCC regulation on our ability to make further competitive strides, including in the E-Rate program in which Cox regularly competes; and (3) Cox's Ethernet over HFC service and the limitations of that service in comparison to Cox's fiber-based services.

Cox Has Been a Pioneer the Provision of Voice and Data Services

4. Cox Communications is a privately held, wholly owned subsidiary of Cox Enterprises that provides advanced digital video, voice, and broadband Internet access services to customers in 23 markets across 18 states. Major Cox markets include Phoenix, Northern Virginia, Virginia Beach/Hampton Roads, Southern California, Las Vegas, Omaha, Kansas, New Orleans, NW Arkansas, Oklahoma City, and Rhode Island. Cox serves business customers and provides wholesale service to other carriers through its Cox Business division.

5. Cox has been providing voice and data service to business customers since 1993, and, by 1996, Cox was already providing data transmission services over its metropolitan area fiber optic networks. Shortly after the passage of the 1996 Communications Act, Cox's Orange County California cable system became the nation's first cable network to offer voice, video, and data services over hybrid fiber coaxial cable ("HFC") networks. Cox is well-regarded as a pioneer in

the provision of such services and has won numerous awards over the years for the quality of its services. Cox today serves over 6 million residential and business customers.

6. Among the many indicators of Cox's pioneer efforts, in 2007, Cox was the first cable company to be placed on the Vertical Systems Group first tier of Ethernet providers. That same year, Cox also became the first cable provider to deploy a fully-owned and managed IP telephony service that addresses the needs of the broad business market for communications solutions. Cox's VoiceManager platform integrates communications devices and desktop PCs to provide unified messaging solutions. In 2013, Cox Business launched IP Centrex nationally, an advanced cloud-based hosted telephone system, delivering business-grade voice service over Cox Business's private network.

Cox Retail Services

7. Cox Business offers a variety of advanced, high speed data, and voice services over its own facilities and IP network. Cox today serves more than **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] using incumbent LEC unbundled network elements. Cox also offers traditional TDM-based services such as DS1s and DS3s, **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY

CONFIDENTIAL] Cox in particular focuses on serving specific business “verticals,” including healthcare providers, schools, financial institutions, and state and local governments.

Cox’s Retail EoHFC Offering

8. Cox also offers retail Ethernet over HFC (“EoHFC”) service but it is a very small percentage of Cox’s business services. For example, **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] of

commercial locations connected via Cox’s HFC network to a Cox metro Ethernet capable headend and that Cox has identified as potentially serviceable using EoHFC.

Cox Wholesale Services

9. Cox Business has also long provided wholesale BDS service to other carriers. The organization serves most of the top tier wireless and wireline telecommunications carriers. Cox has agreements to either buy or sell BDS services to over **[BEGIN HIGHLY**

CONFIDENTIAL] **[END HIGHLY CONFIDENTIAL]** companies.

According to Vertical Systems Group, which tracks Ethernet services, Cox is ranked in the top tier of providers, based on number of ports. Cox, in fact, was the first cable company to be ranked in the top tier of the Vertical Systems Group LEADERBOARD. Currently, Cox is the seventh largest provider of voice services to businesses and supports over one million business

phone lines. As with its retail services, the vast majority of Cox’s BDS wholesale services,

[BEGIN HIGHLY CONFIDENTIAL] **[END HIGHLY CONFIDENTIAL]** are

fiber-based.

Cox's Limited EoHFC Wholesale Service Offering

10. **[BEGIN HIGHLY CONFIDENTIAL]**

¹ See Declaration of Jeffrey Finkelstein, attached hereto as Exhibit 3 ("Finkelstein Decl.") at ¶ 13
[BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

² [BEGIN HIGHLY CONFIDENTIAL]

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[END HIGHLY CONFIDENTIAL]

Growth and Investment in Cox Business Services

14. Overall, Cox has invested over **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] month

over month.

³ **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]

⁴ The 2013 location information also included **[BEGIN HIGHLY CONFIDENTIAL]**
[END HIGHLY CONFIDENTIAL] EoHFC locations.

15. Revenue from business services has also grown. Cox's revenue from business services totaled **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]

Ethernet Prices Cannot Reasonably Be Compared to ILEC DS1 or DS3 Prices

16. We are concerned with the FCC's proposal to benchmark Cox's Ethernet services to incumbent LEC DS1 or DS3 prices. Comparing the pricing of Ethernet services to TDM services is clearly an apples-to-oranges comparison. Ethernet protocol is packet based and the utilization (which leads ultimately to return on investment) is an engineered variable that leverages the "bursty" nature of Ethernet traffic in order to serve multiple customers through the same physical facility. TDM service, by contrast, is a frame based protocol that is constant with deterministic traffic. Each individual DS1 circuit is consistently consuming 1.544 Mbps whether or not there is actual customer traffic at that moment in time. No cost based pricing model can accurately be used to compare these two independent networks. While price per bit rates can be mathematically derived, that price has no rational basis in the true costs of providing that service.

Effects of Price Cuts on Cox's Buildout Decisions

17. As explained above, the decision whether to extend Cox's business services to new locations is highly sensitive to the amount of revenue that can be expected to be earned. As explained in the accompanying declaration of Ken Shelton, many factors are considered in the decision to invest in any geographic area including the specific costs of outside plant civil works,

the anticipated electronics to be used, the permitting and pole costs or other factors of the local regulatory environment, and the rising labor rates of construction. A large portion of expansion of the network, however, is linked to fixed costs that have to be incurred for the first customer in an area. Future opportunities and speculative assumptions have to be made to justify these large capital expenditures.

18. Typically, the foundational assumptions for gauging business opportunities are based on expected revenue, that while grounded with historical trends, still depend on continued market success and the ability to raise or lower prices as competitive forces work to reach equilibrium. The knowledge that Cox has some flexibility to adjust prices provided confidence that Cox would be able to manage to a positive return on the forecasted, multi-year business case.

19. Revenue opportunity, of course, is a matter of how many customers can be served by the new facility and at what price. Revenue reductions thus place obvious pressure on the ability of any specific project to exceed Cox's hurdle rate, all other factors being equal. Regulation that would constrain our ability to adjust pricing creates an inherent lack of confidence that the business case for new investments is sound and achievable. Regulatory intervention into our company's pricing strategy would also severely limit our ability to competitively position ourselves in the marketplace.

20. Cuts of the magnitude under consideration by the FCC, up to 21 percent with further year-over-year declines based on a to-be-determined productivity factor, could reduce Cox's revenue to the point where construction would no longer be viable on some projects, especially those borderline projects where there is already risk that Cox will not recoup its investment. Reductions as low as 5 percent in the rates Cox can charge would cause some projects that today meet Cox's hurdle rate to have prospective returns below that rate.

Effects on Cox's E-Rate Supported Services

26. Cox participates in the E-rate program and currently provides BDS services to more than

[BEGIN HIGHLY CONFIDENTIAL]

[END

HIGHLY CONFIDENTIAL] while also serving libraries and USF-supported health care facilities. Cox regularly responds to RFPs issued by E-rate participants and competes hard for those contracts. In all of Cox's markets where it responds to RFPs, Cox faces competition.

Often Cox is bidding against not only the incumbent LEC but also much smaller local entities that are willing to build fiber in response to an RFP. For example, in the past two years,

[BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

27. This competition (or even the threat of others bidding) already drives down prices and lowers the price that Cox submits, as the previous example dramatically illustrates. The price cuts that FCC is contemplating would create further downward pricing pressure because E-Rate providers cannot charge prices above the lowest corresponding price that the provider charges to non-residential customers that are similarly situated to the school or library. Thus, lowering overall BDS prices, as the Commission proposes, will also lead to a lower corresponding price. This could result in Cox reducing the number of RFPs to which it will respond and could leave schools and libraries without a provider willing to construct the fiber facilities the school needs.

28. To take but one example, under the E-Rate program, Cox provides BDS services to the Gilbert school system in Phoenix, Arizona. **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] Had those lower rates been in effect, Cox could not have provided these services to the school and obtained a reasonable return on our investment.

Costs Cox Incurred in Responding to the Commission’s 2013 Data Collection

29. Cox incurred considerable costs in responding to the Commission’s 2013 data collection, costs that Cox had not anticipated and thus had not included within its planned budgets. Cox objected to the burdens that the data collection imposed and, along with other companies, expressed its concerns to the Office of Management and Budget (“OMB”). In response, OMB called on the FCC to scale back on its collection requests. Unfortunately, given the deadlines imposed and delay in receiving OMB’s response, Cox was already well under in its data collection for the two years the FCC initially requested. While Cox was grateful for OMB’s actions, the cost of much of the work that Cox had already undertaken had already been incurred.

30. Even with the scaled down request, Cox spent considerable amounts both in terms of direct cash outlays to outside consultants and counsel, but also in terms of a massive internal effort to collect information from 23 separate markets contained in seven different data bases. Virtually none of this information was in the form the FCC requested. All told, Cox spent over \$1.2 million in external and internal labor costs. The effort involved virtually every component of Cox Communications, including the following functions:

- Cox Regulatory
- Cox Legal
- Cox IT
- Cox Security

Cox Technology (Network Engineering)
Cox Technology (Mapping)
Cox Technology (CABS)
Cox Business Wholesale
Cox Business Marketing
Cox Business Product Development
Cox Business Analytics
Cox Business Finance
Cox Business Service Delivery
Cox Business Billing and Revenue Assurance

31. We understand that the Commission is contemplating requiring a similar data collection at least every three years that would require obtaining much of the same type of data as the 2013 collection, plus a host of new data. We are advised that the FCC is considering asking for the following additional types of information:

- A report on the different categories of BDS offered, including the different bandwidth speeds offered and the performance level guarantees offered with each type of service;
- Descriptions of how the provider structures its market operations to focus on particular classes of customers and the package of services marketed to each customer class;
- Information on BDS customer churn data, wins and losses over the applicable period, and the provider type to whom they are winning or losing customers to the extent known;
- Internal business documents assessing competitive pressures in the marketplace and changes to business operations in response to competitive pressures;
- Information to better track customer purchases across providers;
- Data on managed services purchased, which include a BDS component; and
- Information specific to the sale of leased lines to, and use by, carrier customer

Cox anticipates that the burden of responding to these proposed new, periodic data collections would be just as great, if not worse, than the 2013 data collection.

Implementing Benchmarking Would Require Substantial Additional Effort

32. We understand that one proposal under consideration by the FCC is to benchmark cable company Ethernet rates to incumbent LEC price capped rates for legacy TDM services on a per-

megabit basis. The example provided by the FCC is that the price for a 5 Mbps Ethernet circuit could be tied to (or capped) at 3.3 times the FCC established price cap rate for the local ILEC's DS1 service. We also understand that the FCC may require cable companies to post their rates and other generally available terms and conditions on their websites so that wholesale and retail customers could check the posted rates against the requisite benchmark to ensure compliance with benchmarking rules. We have been asked to discuss the potential burdens Cox would face if forced to implement such a regulatory scheme.

33. Setting new rates always entails considerable work. Working with various groups within the Cox business organization, Cox derives new rates based on competitive conditions, expected opportunities, and anticipated costs. Cox currently is not required to set its rates in relation to any other company's rates, including the ILECs' rates. Moreover, because pricing strategy is one of the most proprietary elements in our company's portfolio, Cox does not have generally available rates for special access services posted on its website. We provide that information to potential customers once they have been screened and verified by Cox's account representatives, not to be competitive data miners.

34. The Commission's proposal to require companies to benchmark their Ethernet prices to incumbent LEC DS1 or DS3 price capped rates in granularly-defined geographic areas would create enormous administrative burdens. Depending on the geographic granularity that the FCC imposes in this rulemaking, the number of variables involved in any one market becomes impossible to manage. The amount of time, the research and questioning that would have to occur to implement such a proposal, and the ongoing nightmare that will ensue cannot be emphasized enough. One tangible example to consider is the problem of simply determining which price and location should be chosen for comparison. For example, most Metro Ethernet

circuits span multiple locations within a metro area. So, if Location A is at one rate and Location B is at another, which one should be used for the pricing of a competitive service. And, if the higher rate is chosen, what information should be retained as the basis for the pricing decision should the customer have a complaint to the FCC? Furthermore, Ethernet speeds are not priced at the same increments as TDM speeds are priced. So, the pricing of a DS1 operating at 1.544 Mbps is not the same from a cost per bit ratio as a DS3 operating at 45 Mbps. Which comparison point should be chosen for a Metro Ethernet circuit operating at 20 Mbps?

35. Moreover, if Cox were now required to benchmark rates to the price capped DS1 or DS3 rates of the competing ILEC, Cox would need to create a web portal capable of matching rates in each geographic area, for example census blocks, where ILEC rates have been capped to the same geographic area that Cox serves. Cox marketing personnel will need to download DS1 pricing from the ILEC. They will then calculate and then apply rate adjustments to Cox services for each census block. The adjusted rates will then be loaded into Cox's product catalog so that Cox sales representatives can choose the service the customer desires along with the corresponding rate. Quality assurance will need to be performed during the sales and order management process to ensure the proper rate is applied. This will most likely be a manual process depending on the geographic area the Commission adopts. For example, the Cox back office systems do not currently have a Census Block reference capability. A web portal and the back office system modifications could cost millions of dollars to develop, launch, and maintain. The labor costs alone in keeping the pricing synchronized across multiple markets, Census tracks, and competitors would be extreme.

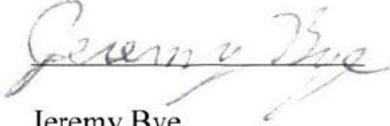
36. Given the complexity of the benchmarking activity to research and compile a price from a company that has knowledgeable employees dedicated to the job, it is easy to see how a less

informed customer would find it almost impossible to navigate among options and match the price option to the service sought. Such consumer confusion leads to indecision, creating additional costs for sales and marketing efforts to try to clear the air in the marketplace.

37. The statements in this declaration are true and correct to the best of our knowledge and belief.

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct.


Jeremy Bye

Dated: June 27, 2016

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct.

A handwritten signature in blue ink, appearing to read "Larry Steelman", is written over a horizontal line.

Larry Steelman

Dated: June 29, 2016

REDACTED - FOR PUBLIC INSPECTION

Exhibit 2

Declaration of Ken Shelton

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Business Data Services in an Internet Protocol Environment)	WC Docket No. 16-143
)	
Special Access for Price Cap Local Exchange Carriers)	WC Docket No. 05-25

DECLARATION OF KEN SHELTON

June 27, 2016

Qualifications

1. My name is Ken Shelton and I am the Executive Director, Business Operations for Cox Communications (“Cox”). In that position, I am responsible for leading the organization that provides financial support for the Cox Business operating groups. Financial support includes budgeting, forecasting, financial analysis and capital investment evaluation. I have more than 25 years of professional financial experience in the cable and telecommunications industry including financial leadership positions with Time Warner Cable and Verizon. Most of my corporate experience has been focused on providing financial support for the business services segments of these companies. I have also led the development of governance programs around the deployment of new business services and the expansion of business services to under-served markets. I am a licensed CPA with an MBA and Bachelor of Science (Finance) degrees from George Mason University.

Introduction

2. I am submitting this declaration on behalf of Cox Communications in the above captioned matter. This declaration will explain the factors that Cox considers in deciding

whether to extend its fiber or Hybrid Fiber Coaxial (“HFC”) facilities to new business locations. It will also describe pricing and other trends in Cox markets that are already causing Cox to reject expansion projects due to market-driven Ethernet price declines and customers’ increasing use of over-the-top providers, rather than Cox, for unified communications services, which eliminates an important source of revenue that otherwise could justify constructing a new connection. I understand that the FCC is considering further BDS price reductions that could be imposed on cable companies in certain areas deemed by the Commission to be non-competitive. Such price reductions would further exacerbate current market conditions, leading to fewer new construction projects and less facilities-based competition from Cox.

How Cox Decides Whether to Extend Facilities to New Locations

3. In my experience, the many factors that Cox considers in deciding whether to extend facilities to new locations are the same as those considered by other companies when deciding to construct new facilities. For any successful facilities-based provider, the expected revenue opportunities for new projects must exceed anticipated costs of construction by a sufficient margin and within a reasonable period of time, called a hurdle rate or an internal rate of return (“IRR”). It is important to note Cox uses the same hurdle rate and undertakes the same analysis for both extensions of fiber and extensions of Cox’s HFC plant to new locations.

4. Cox’s HFC network primarily covers residential areas and many commercial locations in the markets served by Cox are not connected to its HFC plant. Extending HFC plant could, for example, require trenching through a parking lot. Given the cost of construction and low prices for EoHFC services, it is often difficult to justify building out to a new commercial location. Using the Las Vegas market as an example, a customer willing to commit to a three-year term for 1.5, 3, or 5 Mbps EoHFC service would not pass Cox’s hurdle rate once construction costs

exceed **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]

5. When a single customer requests to initiate service at a location where facilities do not exist, Cox uses a standard process to assess whether the expected cash flows will be more than enough to meet the specified IRR. **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]

8. The various factors that influence Cox's financial decision on whether to deploy services include: **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY

CONFIDENTIAL]

9. These factors are also highly dependent on the circumstances in specific Cox markets.

For example, [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

10. The table below reflects the highly variable average cost per mile based on Cox's experience in these markets. These varying construction costs directly affect when a proposed buildout will exceed Cox's hurdle rate. The average cost per mile in the table below assumes trenching. In Cox's experience, [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

11. Cox's decisions to accept the risk of new construction will be affected by the regulations under consideration. The decision to build already entails numerous risks, including: (1) the veracity of construction cost estimates; (2) the validity of demand assumptions; (3) the assumptions about ongoing operating costs of a particular network; and (4) that the customer will fulfill term commitments. Based on its experience, Cox had developed a certain level of confidence regarding the validity of these assumptions. The pricing uncertainty created by this proceeding erodes this historical level of confidence and will have an impact on Cox's future decision whether to invest in certain projects, particularly for those barely surpassing the hurdle rate.

12. The proposed regulations also come at a time of shifting consumer behavior that is creating additional pressure on Cox's build out decisions. As noted below, more customers are using alternative providers or technologies for the services that ride on top of the BDS circuits,

such as voice, video conferencing, streaming, unified messaging, and other managed services. These are services that Cox typically has bundled with its BDS. Using alternative providers or technologies (*e.g.*, wireless for voice service or internet VPNs for streaming) reduces the revenue opportunity needed to offset the costs of construction. As a result, historical revenue projections likely will not continue into the future, adding to the risk of future build decisions, along with any regulations imposed through this rulemaking.

Cox is Already Rejecting New Builds Due to Ethernet Price Declines and Increasing Competition for Managed Services that Ride on Top of Ethernet Circuits.

13. Increasingly, market-driven price declines for Ethernet services are making it more difficult to justify fiber builds, resulting in more projects being rejected or requiring the customer to pay more of the construction costs and/or agreeing to much longer service terms, such as 6 or 8 years. Effectively, agreeing to longer service terms allows Cox to extend the time it is able wait for the return on its investment. The increasing use of over-the-top voice and unified messaging providers by business customer is also diminishing Cox's revenue opportunities. When the customer does not use Cox for managed services, Cox must recover construction costs solely through the revenue obtained from the sale of the BDS service. The loss of this revenue opportunity further strains Cox's ability to recoup its capital investment and leads to even fewer projects. Pricing pressure is also coming from an increasing number of dark fiber over builders

14. It is Cox's experience that Ethernet pricing follows traditional supply and demand responses as one would expect in competitive markets. As supply has increased, Ethernet prices have declined from 2012 levels in all markets, in some instances precipitously. Overall prices have [BEGIN HIGHLY CONFIDENTIAL]

END HIGHLY CONFIDENTIAL]

15. Further evidence of price declines is shown in the chart below, which shows that Cox's average monthly recurring charges per megabit for its fiber-based Ethernet services [BEGIN

HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

16. With current price erosion already happening in the market, caused by natural competition and customer technology alternatives, Cox's management team has to further scrutinize our plant extension policy. We will continue to build out where it makes economic sense. However, the pricing environment introduced by this rulemaking increases the risk in the marketplace. We will respond to that by being more cautious in the use of the limited capital available.

17. The statements in this declaration are true and correct to the best of my knowledge and belief.

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct.



Ken Shelton

Dated: June 27, 2016

REDACTED - FOR PUBLIC INSPECTION

Exhibit 3

Declaration of Jeffrey Finkelstein

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Business Data Services in an Internet Protocol Environment)	WC Docket No. 16-143
)	
Special Access for Price Cap Local Exchange Carriers)	WC Docket No. 05-25
)	

DECLARATION OF JEFFREY FINKELSTEIN

June 27, 2016

Qualifications

1. My name is Jeffrey Finkelstein. I am the Executive Director of Network Strategy at Cox Communications (“Cox”). I have been part of the engineering and architecture groups at Cox since 2002 and led the team responsible for the deployment of DOCSIS technologies, from DOCSIS 1.1 to DOCSIS 3.0. I have made significant contributions to the access network design and deployments at Cox, and have the new role of being responsible for future technology planning of backbone, metro, edge, access, and home networks. I am part of the effort at CableLabs defining the specification for DOCSIS 3.1 PHY and MAC teams.

Introduction

2. I am submitting this declaration on behalf of Cox in the above captioned proceeding. This declaration will describe the nature of Cox’s Fiber network used to provide dedicated point to point services and Cox’s Hybrid Fiber-Coaxial (“HFC”) access network and in particular how it used to provide Ethernet services. I will also describe the actions that Cox will need to

undertake to upgrade its system to DOCSIS 3.1 and the planned use of that upgraded network to provide Ethernet services.

Description of Cox’s HFC Network

3. Like all cable HFC networks, Cox HFC plant is a shared network. This means that all of the customers using the network must share the available bandwidth. It is designed to be a “best efforts” network. Notwithstanding that it is best efforts, Cox very carefully manages bandwidth supply and demand so as to optimize customer experiences and help ensure that customers enjoy the broadband speeds that they have purchased. In addition to being shared, the other key feature of the HFC network is that its capacity is designed to be asymmetric. There is substantially more downstream bandwidth capacity available than upstream bandwidth capacity, which reflects consumer expectations and needs, such as viewing videos over their broadband connection.

4. Cox’s HFC broadband network consists of five key segments: (1) a national backbone that interconnects Cox’s 23 markets throughout the country and to peering points to access the Internet; (2) Metro hubs, which are the aggregation points for the local network; (3) headends and optical line termination routers; (4) outside plant, which consists of fiber that runs from headends to nodes that aggregate the coaxial cable that runs to individual homes or businesses to the fiber feeder; and (5) customer premises equipment such as modems, set-top boxes, and WiFi routers (for homes) and modems and other equipment for business customers. The last three components make up Cox’s “access network” – the network that directly reaches consumers.

[BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

5. Behind the fiber node, the coaxial cable plant includes some number of attached amplifiers that are used to maintain signal quality and strength between the node and the

customer locations. Cox's plant typically includes five amplifiers, designated as an N+5, for node plus five amplifiers. As Cox drives fiber deeper into neighborhoods, the number of amplifiers needed decreases and the fiber feeder will be able to serve a smaller Service Group. The Service Group is the collection of individual homes and businesses that are connected to a fiber node.

6. At Cox, the average Service Group consists of approximately **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** individual active customer locations receiving some combination of Cox's broadband, video, and voice services. The average number of households passed in a Service Group is about **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** homes. The active customers in a service group must share all of the upstream and downstream capacity available to the service group.

7. Due to the fact that upstream and downstream capacity must be shared by all customers in the Service Group, Cox carefully manages available bandwidth. The goal is to optimize the customer's usage during peak usage periods. The key factors in managing bandwidth are the speeds purchased by the individual customer and the mix of speed tiers and tier penetration of the Service Group. Cox currently offers broadband speed tiers from 5 Mbps to 300 Mbps.

[BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL] The remaining bandwidth (or spectrum) available in the HFC cable plant is dedicated to video services.

8. [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL]

9. As customers demand increases, for example as more customers purchase higher speed tiers or the number of customers increases, Cox currently has one primary option to increase available bandwidth. Cox must build fiber out and create an additional node, a process called splitting the node. In other words, if a node served [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY

CONFIDENTIAL] The cost may be higher and the timeline longer in dense business districts or office parks where underground fiber needs to be constructed. It would never be cost effective to split a node just to serve a few EoHFC customers.

Utilizing the HFC Network to Provide Ethernet Services

10. The primary economic driver of the HFC network is the provision of video, broadband, and voice service to residential consumers and best efforts Internet access to business customers.

Cox has approximately [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY

CONFIDENTIAL] current EoHFC retail customers. Thus, Cox's first priority is to manage the capacity of the HFC network to ensure that its residential broadband and best efforts business Internet customers can access the Internet at the speeds and capacity that have purchased from Cox.

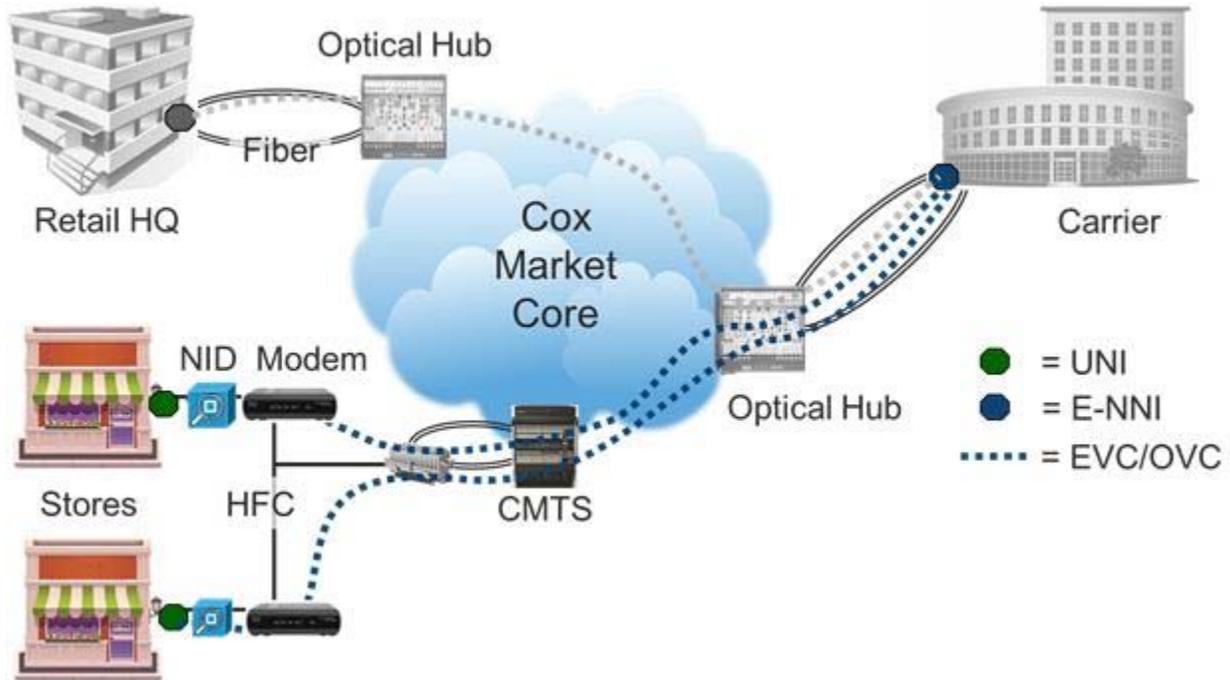
11. Nevertheless, as noted, Cox does offer EoHFC service to small number of retail customers as well as a wholesale EoHFC product offered to carriers on an individually negotiated contract basis. Cox's wholesale service is called Wholesale Ethernet Access – Hybrid Fiber Coax Service or WEA-HFC service. The WEA-HFC service provides transport between the User-to-Network Interface at the carrier customer's end user location and the Network-to-Network Interface at the carrier customer's point of presence. It provides Metro Ethernet Forum (MEF)-defined Ethernet virtual circuits at symmetrical speeds from 1.5Mbps to 10 Mbps consistent with IEEE 802.3 standards. Figure 1 below illustrates the network configuration for Cox's WEA-HFC service. As that diagram illustrates, the HFC network, including the fiber component is separate from the Cox's fiber-based business services, depicted in the upper right had corner of the diagram. Only Cox's core fiber network, from the optical hub to a carrier point of presence as depicted in this diagram would be shared between the fiber and HFC "edge" networks, but as noted, the core portion of Cox's overall network represents [BEGIN HIGHLY

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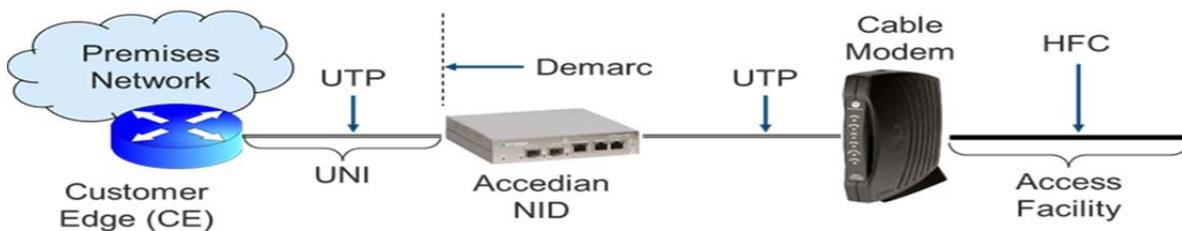
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Figure 1—Cox’s WEA-HFC Network Configuration



12. Figure 2 below provides a more detailed depiction of the network at the end user premises and the connection is over Cox’s wholesale EoHFC product. In this diagram, UTP refers to Unshielded Twisted Pair such as Cat 5 at the customer premises. For wholesale customers only, Cox provides the ability to monitor network performance through the Accedian NID device.

Figure 2 – Cox WEA-HFC Configuration at the End User Premises



13. The constraints inherent in a shared network have consequences for offering EoHFC as a “dedicated,” symmetrical point-to-point service. One consequence is that the best available symmetrical speeds Cox offers for EoHFC are much lower than the highest speeds available over Cox’s fiber-based Ethernet services. Cox currently offers EoHFC only up to 10 Mbps and at increments of 1.5, 2, 3, 4, 5, 6, 8 and 10 Mbps. **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] Cox’s fiber-based wholesale service, on the other hand, offers speeds from 5 Mbps to 10 Gbps.

14. Another technical limitation of the HFC Ethernet service is that it does not meet the MEF Maximum Transmission Unit (MTU). MTU (which relates to frame size) is an important Ethernet performance standard, because it affects the rate and efficiency of data throughput. A higher MTU provides for higher throughput. The MEF’s MTU standard is 2000 bytes but EoHFC service provides only an MTU up to 1522 bytes with DOCSIS 3.0. DOCSIS 3.1 increases the EoHFC MTU to 2,000 bytes. Ethernet over fiber or Ethernet over TDM permits much higher MTUs. **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL]

15. The second key constraint of using a shared network is that Cox cannot offer performance guarantees for its EoHFC products, with the sole exception of offering service interruption credits. Instead, Cox offers performance level *objectives* for latency and jitter, but only for its wholesale offering. Moreover, the performance objectives are well below the enforceable performance levels available over Cox’s fiber-based product. In other words, unlike its wholesale *fiber-based* Ethernet product, which does offer credits for failing to meet stated performance levels, Cox does *not* offer any credits for failing to meet the performance objectives

of its EoHFC wholesale product, again with the sole exception of network availability. Cox does not offer performance objectives for latency or jitter to retail EoHFC customers. The accompanying declaration of Jeremy Bye and Larry Steelman provides additional detail on the difference between Cox's EoHFC and fiber-based Ethernet products.

Upgrading to DOCSIS 3.1 Will Not Greatly Improve Cox's EoHFC Product

16. Cox, like much of the industry, will soon be rolling out the latest HFC technology, DOCSIS 3.1. This technology will enable faster downstream speeds and will bring tremendous benefits to our broadband customers. **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY

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17. DOCSIS 3.1 will enable 1 Gbps downstream speeds assuming initially low customer uptake – **[BEGIN HIGHLY CONFIDENTIAL]**

[END HIGHLY CONFIDENTIAL] DOCSIS 3.1, however, is still shared network architecture and upgrading the network to DOCSIS 3.1 does not reduce the size of the Service Groups behind the node. In order to reduce the number of customers served by the node, nodes must be split, as explained above, or Cox must drive fiber deeper into neighborhoods.

18. Moving to DOCSIS 3.1, thus, will not have significant impact on Cox's EoHFC offerings. Cox, for example, does not anticipate offering different service level agreements than it does today with its WEA-HFC wholesale or EoHFC retail services based on current technology.

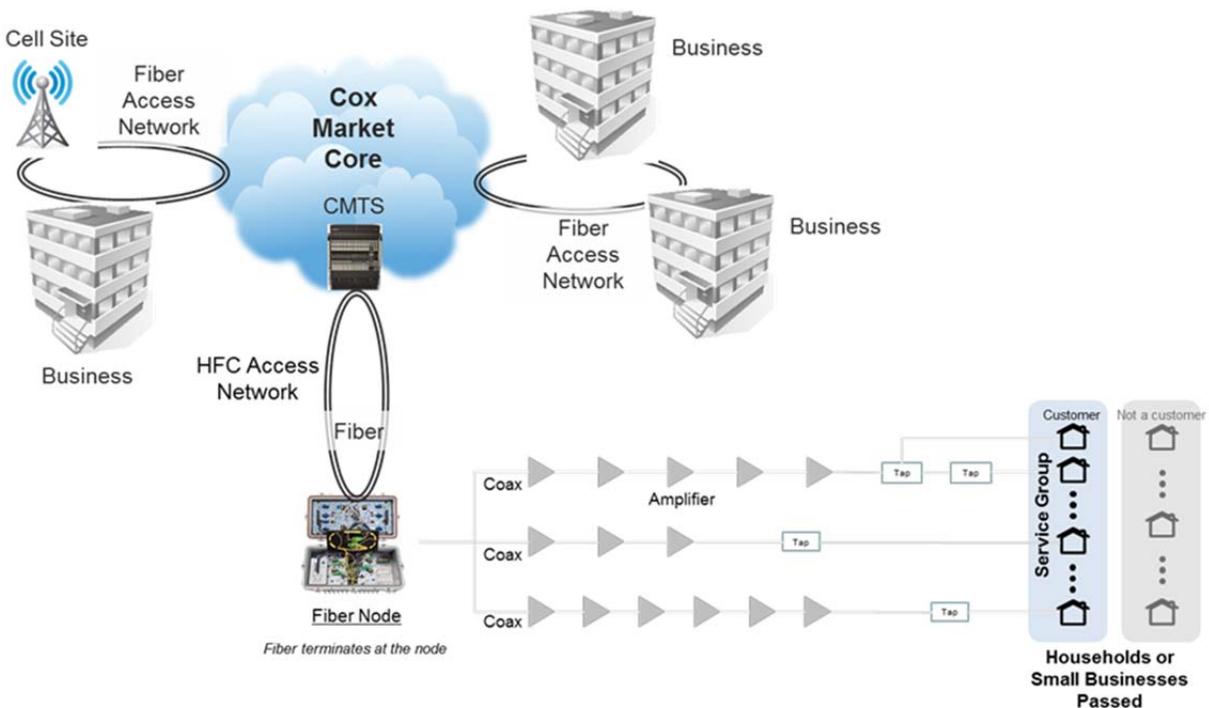
19. Deployment of DOCSIS 3.1 for Cox constitutes what we call a forklift upgrade. It will require a complete replacement of the current Cable Modem Termination System (“CMTS”) infrastructure that will cost millions of dollars to complete. I understand some have suggested that the transition to DOCSIS 3.1 is akin to a software upgrade, but as just noted, this is not the case. Cox will be replacing CMTS equipment in all of its headends with the new generation of Cable Converged Access Platform (CCAP) equipment. Cox will also increase the amount of fiber in its networks to enable future product innovations.

EoHFC Is Not a Viable Wireless Backhaul Platform.

20. I also understand that there is an assumption that EoHFC may be a viable product for cell site backhaul, especially for the next generation of wireless technology, 5G. This assumption is not correct given the performance expectations of the cellular companies. For the reasons just explained, Cox’s HFC service is insufficiently robust either in terms of capacity or service quality to be utilized for cell site backhaul purposes. This will not change with the deployment of DOCSIS 3.1, which as noted, is still a shared network. For one, it is my experience that wireless carriers today require at least 50 Mbps speeds for Ethernet backhaul, speeds that Cox does not currently offer and does not currently plan to offer even after DOCSIS 3.1 is deployed its HFC network. Moreover, many cell sites are located in remote areas and it would not make economic sense to extend the HFC network, which would include having to deploy a number of amplifiers, just to serve one location. In short, backhaul for cell sites typically require a fiber connection. Additionally, much of Cox’s fiber-based products are designed as part of a ring configuration with built-in redundancy that sharply limits network downtime and interruptions. Perhaps because of these limitations, no wireless carriers have ordered Cox’s EoHFC for cell site backhaul.

21. As noted above, Cox’s fiber network used to provide dedicated services to business customers is separate from Cox’s HFC network used to provide residential and business voice, video, and best efforts broadband service, and now being made available for EoHFC service. Figure 3 below depicts how Cox has deployed fiber facilities for business service wholly independent from the Cox’s edge HFC network. One significant consequence of having to build separate last mile networks is that there limited ability, if any, ability to leverage Cox’s HFC edge network. Fiber must be separately constructed to reach business locations and the costs of that construction must be recouped solely from the revenues from providing services to those businesses.

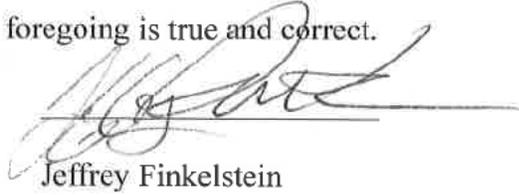
Figure 3: Cox’s Fiber and HFC Networks



22. The statements in the declaration are true and correct to the best of my knowledge and belief.

VERIFICATION

I declare under penalty of perjury that the foregoing is true and correct.



Jeffrey Finkelstein

Dated: June 27, 2016