

REDACTED - FOR PUBLIC INSPECTION

April 14, 2016

VIA ECFS

Ms. Marlene H. Dortch
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 *Protective Orders*¹ in WC Docket No. 05-25 and the Commission's April 6, 2016 Public Notice² addressing the treatment of data that is derived from Highly Confidential and Confidential data in the data collection, I respectfully submit the Revised Public Versions of the following documents:

- Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (originally filed Jan. 27, 2016) ("Attachment A");
- Reply Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (originally filed Feb.19, 2016) ("Attachment B"); *and*
- Supplemental Reply Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (originally filed Mar. 2, 2016) ("Attachment C"). This version has been corrected to reflect the same pagination as the Highly Confidential version.

Parties who are admitted to the *Protective Orders* in this proceeding can request a copy of the Highly Confidential versions of the enclosed documents by contacting John Nakahata at Harris, Wiltshire & Grannis LLP (jnakahata@hwglaw.com).

¹ See *Special Access for Price Cap Local Exchange Carriers; AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, Order and Data Collection Protective Order, DA 14-1424, 29 FCC Rcd. 11,657 (Wireline Comp. Bur. 2014); *Special Access Rates for Price Cap Local Exchange Carriers, Modified Protective Order*, DA 10-2075, 25 FCC Rcd. 15,168 (Wireline Comp. Bur. 2010); *Special Access Rates for Price Cap Local Exchange Carriers, Second Protective Order*, DA 10-2419, 25 FCC Rcd. 17,725 (Wireline Comp. Bur. 2010); *Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans*, Protective Order, DA 15-1837, 30 FCC Rcd. 13,680 (Wireline Comp. Bur. 2015).

² *Public Statements Derived from Highly Confidential Data Filed in Response to the Business Data Services (Special Access) Data Collection*, Public Notice, DA 16-368, WC Docket No. 05-25, RM-10593 (rel. Apr. 6, 2016).

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Please do not hesitate to contact me at 202-274-4315 if you have any questions regarding this submission.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Jonathan Baker". The signature is written in a cursive style with a large, looped initial "J".

Jonathan Baker

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ATTACHMENT A

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Special Access Rates for Price Cap Local)	WC Docket No. 05-25
Exchange Carriers)	
)	
AT&T Corporation Petition for Rulemaking to)	RM-10593
Reform Regulation of Incumbent Local)	
Exchange)	
Carrier Rates for Interstate Special Access)	
Services)	

**DECLARATION OF JONATHAN B. BAKER ON MARKET POWER IN THE
PROVISION OF DEDICATED (SPECIAL ACCESS) SERVICES**

I. Introduction

A. Qualifications

1. I am an economist specializing in antitrust, industrial organization economics, and regulation. I am currently a Professor of Law at American University Washington College of Law, where I have taught since 1999, mainly in the areas of antitrust and the economic regulation of business. I am also a Senior Consultant for a subsidiary of FTI Consulting.
2. I have served in several senior U.S. government positions involving antitrust and regulation. Most recently, from 2009 to 2011, I served as the

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Chief Economist of the Federal Communications Commission (FCC) and, during 2011, I served the FCC as a Senior Economist for Transactions.

From 1995 to 1998, I served as the Director of the Bureau of Economics at the Federal Trade Commission. Previously, I worked as a Senior Economist at the President's Council of Economic Advisers, Special Assistant to the Deputy Assistant Attorney General for Economics in the Antitrust Division of the Department of Justice, an Assistant Professor at Dartmouth's Amos Tuck School of Business Administration, an Attorney Advisor to the Acting Chairman of the Federal Trade Commission, and an antitrust lawyer in private practice.

3. I am also the co-author of an antitrust casebook, a past Editorial Chair of the *Antitrust Law Journal*, a past Chair and past member of the Executive Committee of the Antitrust and Economic Regulation Section of the Association of American Law Schools, and a past member of the Council of the American Bar Association's Section of Antitrust Law. I have received American University's Faculty Award for Outstanding Scholarship, Research, and Other Professional Accomplishments, and the Federal Trade Commission's Award for Distinguished Service. I earned a J.D. from Harvard and a Ph.D. in economics from Stanford University. My curriculum vitae, which is attached, details my background, experience, past testimony, and publications.

B. Assignment

4. I have been asked by three competitive local exchange carriers (CLECs) – Level 3 Communications, Windstream, and XO Communications – to evaluate the extent to which incumbent local exchange carriers (ILECs) exercise market power in markets for the provision of dedicated services. In the context of conducting this evaluation, I was asked to review and analyze the data made available by the Federal Communications Commission in response to the Commission’s Special Access Data Collection.

C. Summary of Major Conclusions

5. The potential exercise of market power in the provision of dedicated services may be analyzed in markets for dedicated services provided over a wireline connection to each customer location. The product market excludes best efforts business broadband and dedicated services provided over a fixed wireless connection. (Defining dedicated services provided over a wireline connection as a product market does not rule out also defining narrower product markets, and defining each customer location as a geographic market does not rule out also defining broader geographic markets.)

6. In the data made available by the FCC, most dedicated services markets are monopolies, and most of the rest are duopolies. When there is one provider, it is nearly always an incumbent local exchange carrier

(ILEC). Most duopoly markets are served by an ILEC and a competitive local exchange carrier (CLEC). (Some CLECs are cable providers offering dedicated services.) In many markets, some, if not most or all CLECs provide only a limited constraint on the prices charged by the ILEC. Moreover, the prospect of entry is unlikely to deter incumbents from charging supracompetitive prices.

7. Given the structure of dedicated services markets, ILECs are likely able to exercise market power in most markets, and would be expected to charge prices above competitive levels unless prevented by regulation.

8. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ This conclusion is consistent with the statistical analysis of the data provided through the FCC's Special Access Data Collection. That analysis shows that ILEC retail prices are lower when CLECs compete with them, and that ILEC retail prices tend to decline as the number of rivals selling dedicated services increases. The decline in price associated with additional rivals is likely greater than the reported results suggest, because the regression results are likely biased against identifying an inverse relationship between the number of rivals and price. These results do *not* demonstrate that ILECs lack market power for dedicated services. ~~[END HIGHLY CONFIDENTIAL]~~

II. Dedicated services

9. This report uses the term “dedicated services” to refer to the transmission of data, often using dedicated facilities but also including other dedicated connectivity, to provide customers with a specified bandwidth along an agreed-upon route.

A. Technology

10. Many dedicated services connections are circuit-based (as opposed to packet-based). Many of these use the TDM (time-division multiplexing) protocol, a centrally-controlled method for sending multiple signals over the same connection. TDM services are provided primarily using DS1 or DS3 (collectively DS_n) electronics, although there are also higher bandwidth TDM services. DS1 services have 1.5 Mbps capacity individually and up to 12 Mbps if bonded. DS3 services have 45 Mbps capacity and are rarely bonded.

11. Other dedicated services connections use a packet-based Internet protocol (IP), such as the Ethernet protocol. (The Ethernet protocol is an industry standard that is typically used for local area networks (LANs) within buildings and wide area networks (WANs.) Connections using Ethernet electronics have flexible transmission capacities which range from 1 or 2 Mbps to 1 Gbps or more. DS_n services can be converted to Ethernet protocol by adding electronics.

12. TDM and Ethernet electronics can each be employed with fiber or copper facilities (including hybrid facilities). Fiber is typically employed when high transmission capacity is required, and the relative prevalence of fiber is growing as ILECs retire copper loops. When Ethernet is provided over bare copper loops, maximum bandwidth is usually lower and service may be less reliable than when Ethernet is provided over fiber. (Lower speed retail Ethernet service can also be provided using wholesale DS1 and Ds3 connections (Ethernet-over-serial or Ethernet-over-TDM).)

13. In constructing data and voice transmission networks, dedicated services connections may link an end user location with a network location, as by linking business customers in office buildings to an ILEC's central office, CLEC's node (network interconnection point), or interexchange (long distance) carrier's (IXC's) node. These links may be used to provide services to a single end user location, or to construct networks that connect multiple end user locations (as with bank branch locations, affiliated hospitals, or schools in a system), whether those locations are found in a single city or a larger region. Dedicated services connections may also link a cell tower with an ILEC's or wireless provider's network interconnection point, to provide backhaul services for wireless providers.

B. Providers and Facilities

14. Dedicated services are provided by ILECs and CLECs (which in some cases are cable providers). For regulatory purposes, the FCC has separated the dedicated facilities used in the provision of TDM services into two segments: channel termination and local transport. (The regulatory scheme is discussed further below.) Channel termination facilities (also termed last-mile connections or local loops) run between the end user's location and an ILEC central office or wire center.¹ Local transport facilities (also termed dedicated transport, inter-office transport, or channel mileage) connect ILEC central offices or wire centers (including connections to a competitor's network collocation at a different central office).

15. When dedicated services are provided by a CLEC, the CLEC commonly offers the services using an ILEC's connection for channel termination and the CLEC's own facilities for local transport. On occasion, though, a CLEC may instead, or in addition, use its own or another CLEC's channel termination facilities, or an ILEC's or another CLEC's local transport facilities.

16. A CLEC may obtain the facilities it uses to provide dedicated services in a number of ways. It may build its own facilities, including

¹ A second type of channel termination, between a CLEC or IXC node and an ILEC central office, wire center, or similar ILEC location, is termed an entrance facility (or port).

backbone facilities and last-mile connections. It may lease DSn or Ethernet services from an ILEC when the ILEC makes them available; these are typically combined with the CLEC's own network facilities when providing services. A CLEC may lease unbundled "dry copper" loops, or DS1 or DS3 capacity loops, from an ILEC (typically as an unbundled network element (UNE)) and add its own electronics. Or it may lease DSn or Ethernet services from another CLEC, or lease dark fiber loops from another CLEC (*e.g.*, Zayo) and add its own electronics. (Section V.A below identifies the providers that are considered market participants.)

C. Customers and Contracts

17. Wholesale customers, such as CLECs, almost always purchase dedicated services and UNEs for their transmission capabilities, using the dedicated connectivity as an input for providing business services to their retail customers. Wholesale contracts may be for the data transmission connection only, and may include DSn or Ethernet services. But dedicated services purchased at wholesale typically do not include additional services of the type often sold to retail customers, described below.

18. A CLEC may purchase dedicated connectivity at wholesale (usually from an ILEC) to make a connection within its network (*e.g.*, between a small island exchange and its network backbone) or when needed to meet a specific customer's needs (as may occur when a customer's location is not served by the CLEC's own last-mile network, particularly with

customers that require service in multiple locations). Wireless carriers purchase dedicated services at wholesale to create “backhaul” links between cell towers and their networks.

19. Retail customers (end users) differ widely in their reasons for purchasing dedicated services, as these customers use the data transmission provided by such connections as an input into the production of a variety of products and services, which will be referred to as managed services. Managed services might include, for example, an interoffice networking and collaboration service such as a virtual private network (VPN), video connections (as for conferencing), data storage, data security services, firewall management, and customer support. When end users purchase managed services, dedicated services (data transmission) are typically bundled in. Larger enterprises tend to purchase more, and more complex, managed services than smaller ones (as well as tending to demand higher bandwidth connections, greater reliability, superior performance, and connections involving multiple locations), although there are exceptions.

20. Wholesale customers and larger retail customers purchasing dedicated services often negotiate prices directly with firms selling dedicated services, though they may pay rates based upon tariffs, while smaller retail customers typically purchase dedicated services at more standardized prices. Contracts typically provide significant quality of

service (QoS) guarantees on service uptime, time to repair, jitter, latency, and packet delivery. QoS guarantees may also be implied by the nature of the service. (By contrast, it is unusual for contracts for best efforts broadband services to provide similar guarantees.)

D. Price Regulation

21. The FCC subjects some but not all dedicated services offered by ILECs to ex ante price regulation.² The regulatory scheme generally covers ILEC TDM-based services and some ILEC Ethernet services. Certain specified large ILEC Ethernet services have been exempted. DSn connection prices may be regulated under the regulatory scheme sketched below, or, if a DSn-capacity facility is offered as an unbundled network element (UNE), regulated under a different scheme.

22. For regulated dedicated services, ILEC tariffs establish, among other things, separate channel termination and channel mileage charges. A price cap index derived from a collection of services is set at levels theoretically adjusted over time for inflation and productivity gains (called the "X-factor"), and, possibly, for exogenous ILEC cost increases. (Beginning in 2004, the X-factor was set equal to the inflation adjustment.)

² Although dedicated services connections usually connect nearby locations, most carry more than 10% Internet or other interstate traffic, so are considered interstate service for FCC regulatory purposes.

23. In broad overview, the regulatory scheme has given ILECs pricing flexibility in a Metropolitan Statistical Area (MSA) when certain prerequisites were met: enough collocation by competitive carriers in ILEC wire centers, and enough investment by competitive carriers in fiber-based transport facilities to those collocations. Pricing flexibility does not exempt ILECs from a regulatory obligation to offer generally-available tariffs for TDM-based services, and ILECs that offer a customer volume and term discounts must make the same offer available to all similarly-situated customers. In practice, discounts can be combined through contract tariffs that effectively result in customer-specific pricing.

24. Phase I pricing flexibility permits ILECs to lower their rates through contract tariffs and volume and term discounts, but requires that they maintain their generally-available price-cap constrained tariff rates within a prescribed rate structure. Phase II pricing flexibility, which is predicated on greater fiber-based collocation but not on any measure of alternative last-mile transmission facilities, permits ILECs to raise or lower their rates in an area unconstrained by price caps and gives them freedom to alter their rate structures.³ Pricing flexibility (either phase) has been granted in most large metropolitan areas. In August 2012, the FCC suspended further Phase I and Phase II grants, pending determination of a

³ The ILECs must continue to maintain generally-available tariffed service offerings, but in practice this requirement does not constrain them in Phase II because they can create new service offerings to meet new customer demands and file tariff amendments that take effect at the end of the same day.

more precise method of measuring the degree of competition warranting pricing flexibility, without suspending pricing flexibility in MSAs where it had already been granted.

III. Analytical Framework for Evaluating Market Power

25. This report relies on methodologies standard in antitrust economics for making inferences about market power from market structure, conduct and performance. The approach employed is consistent with what the FCC called for in its 2012 *Suspension Order*,⁴ the framework adopted in the FCC's 2010 *Qwest Phoenix Forbearance Order* to analyze whether forbearance should be granted from UNE regulation,⁵ and the approach of the Department of Justice and Federal Trade Commission Merger Guidelines.⁶ The sections below discuss market definition, market participants and rivalry, and entry.

⁴ *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, 27 FCC Rcd. 10557, ¶¶ 87-104 (2012) (*Suspension Order*).

⁵ *Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Phoenix, Arizona Metropolitan Statistical Area*, 25 FCC Rcd. 8622 (2010) (*Qwest Phoenix Forbearance Order*), *aff'd*, *Qwest Corp. v. Fed. Comm'n Comm.*, 689 F.3d 1214 (10th Cir. 2012). The FCC described its *Qwest Phoenix* framework as a "traditional" market power analysis and relied on the Department of Justice and Federal Trade Commission Merger Guidelines in explaining it. *Qwest Phoenix Forbearance Order* at ¶¶ 24, 28, 28 n. 82, 37, 41. The United States Court of Appeals for the Tenth Circuit described the *Qwest Phoenix* framework similarly in its 2012 decision affirming the FCC's order in that matter. *Qwest Corp.*, 69 F.3d at 1230 (holding that the FCC's decision to adopt a market power approach was not arbitrary or capricious).

⁶ The FCC highlighted its past reliance on the *Qwest Phoenix* and Merger Guidelines approaches in its 2012 *Suspension Order* at ¶89. *See also id.* at ¶92 (endorsing use of a multi-faceted fact-based market analysis as in line with current approaches to competition policy); *id.* at ¶ 92 n.289 ("In the *LEC Classification Order*, for example, the Commission considered several factors as part of its structural competition analysis, including the relevant product and geographic markets, market characteristics

IV. Market Definition

A. Methodology

26. Market definition is based on assessing the magnitude of buyer substitution, one of several economic forces affecting the ability of firms to exercise market power. (Other forces, including supply substitution and entry, and rivalry, are accounted for in other steps of a structural analysis of market power.) A market is a collection of products and locations, and, for a price discrimination market, also a group of targeted customers, that would form a valuable monopoly. Under the conceptual experiment set forth in the Merger Guidelines, a collection of products and locations (and possibly customers) is a market if it would be profitable for a hypothetical monopolist to raise price by a small but significant and non-transitory amount, accounting for the incentive of buyers to respond to higher prices by substituting to other products or locations (or not purchasing the product).⁷

27. The competitive concern with dedicated services markets involves the possibility that ILEC providers of such services exercised market power in the past, notwithstanding the regulatory regime governing pricing of some dedicated services and UNEs, as well as the possibility that

(including market shares), the potential for the exercise of market power, and whether the exercise of market power could be counteracted by potential entry by competitors.”).

⁷ U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines § 4.1.1 (2010). In the conceptual experiment, prices need not increase by the same amount for all products and locations in the collection, and may increase for only some products or at only some locations.

they exercise market power today and, absent regulatory reforms, will continue to do so in the future.⁸ Although the analytical framework set forth in the Merger Guidelines primarily addresses a future exercise of market power, its general approach is also appropriate for evaluating the current and past exercise of market power.⁹

28. To evaluate buyer substitution possibilities, it is useful to have in mind four examples of customers of dedicated services: (a) a bank with multiple locations that leases dedicated connections for all locations; (b) a law firm with an office in a downtown building that leases a dedicated connection in order to provide each attorney with voice, Internet and video conferencing services; (c) a wireless provider that leases a dedicated connection to a cell tower; and (d) a CLEC that leases a last-mile connection to one or more locations of a multi-location customer (such as one or more branches of the bank (a)) in order to provide dedicated services at all locations. Buyers (a) and (b) are end users (retail purchasers). Buyer (c) is a wholesale purchaser, leasing dedicated services in order to sell wireless services to its customers. Buyer (d) is a provider of dedicated services to end users, leasing one connection from another

⁸ See, e.g., *Order and Notice of Proposed Rulemaking*, WC Docket No. 05-25, RM-10593 ¶18 (Jan. 31, 2005) (*Special Access NPRM*).

⁹ When the concern is with the possibility of competitive harm in the past, it is typically preferable to assess the magnitude of buyer substitution for the purpose of market definition by considering the extent to which buyers would respond to a small *decrease* in price by increasing purchases, substituting away from other products or locations. See generally Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74 *Antitrust L.J.* 129, 169-173 (2007) (discussing market definition and the *Cellophane* fallacy when retrospective exclusion is alleged).

provider (a wholesale purchase) in order to sell dedicated services (and, likely, other services) to an end user.

29. These buyers may differ in many ways that affect the value they place on dedicated services, the cost of providing those services, and the set of possible providers they can look to. These differences may include buyer demands for transmission capacity, reliability, and service quality; the additional services bundled with their dedicated transmission capacity (which may affect their demands for capacity, reliability and service quality); the number and geographic distribution of the locations they seek dedicated connections to serve; their proximity to other customers (*e.g.*, in the same office building); the building access fees and other costs a new provider must bear to provide them with service; and their proximity to ILEC central offices and nodes on CLEC fiber rings.

B. Product Markets

30. This section explains why it is appropriate to define a product market for dedicated services provided over a wireline connection. This definition excludes, among other things, best efforts business broadband services and dedicated services provided over a fixed wireless connection.

This product market definition does not rule out also defining narrower product markets based on demand substitution considerations.¹⁰

(1) Exclusion of Best Efforts Business Broadband

31. Best efforts broadband is excluded because it lacks service quality features – particularly availability, reliability, customer support, and security – required by most dedicated services retail customers.¹¹ It may also lack the dedicated bandwidth (in both directions) those customers require. As a result, most customers of dedicated services would not substitute to a service provided over best efforts broadband in response to a small increase in the price of dedicated services, and few would substitute from best efforts broadband to dedicated services in response to a small decrease in the price of dedicated services.¹² Not surprisingly, dedicated services providers generally do not respond to changes in prices or contract terms offered by best efforts broadband providers by changing

¹⁰ Smaller markets often are nested within larger ones. It is appropriate to analyze firm conduct in any or all markets in which competitive harm may be found. *See generally* Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74 *Antitrust L.J.* 129, 148-51 (2007).

¹¹ Declaration of Chris McReynolds on behalf of Level 3 Communications, Inc. (Level 3 Provider Decl.) ¶ 20 (most of Level 3's customers do not view best efforts broadband Internet as sufficient to meet their needs, which include dedicated bandwidth, symmetrical speeds, service level agreements, and a high level of security); *compare* Declaration of Dan Deem, Douglas Derstine, Mike Kozlowski, Arthur Nichols, Joe Scattareggia, and Drew Smith (Windstream Decl.) ¶¶ 17-22 (describing common requirements of dedicated services buyers) *with id.* at ¶¶ 39-41 (describing different needs of best efforts customers); *see id.* at ¶ 29 (cable connections do not offer the services that dedicated services customers usually require).

¹² Windstream Decl. at ¶ 24. In practice, the retail customers that value most the service quality features available through dedicated services and not available through best efforts broadband generally have the most employees and spend the most on communications services. For that reason, CLECs often look to a potential buyer's number of employees and its level of communications spending to identify customer prospects. *See, e.g.*, Windstream Decl. ¶¶ 13-16.

prices or contract terms for their own services.¹³ Hence a hypothetical monopolist of dedicated services is unlikely to find that the threat of buyer substitution to best efforts broadband makes it unprofitable to price above the competitive level.

32. In recent years, as its price has declined and available bandwidth has increased in many locations, best efforts broadband has often become the preferred option for retail customers with limited demands for service quality.¹⁴ These may include customers who do not plan to purchase managed services (such as a dedicated wide area network or a hook up to a remote data center) and who, in consequence, place a lower value on reliability and security than do typical dedicated services buyers. At whatever bandwidth available for best efforts broadband, end users are typically in one camp or the other, preferring either dedicated services or best efforts broadband given the prices and attributes of each, and would not change their choice in response to a small shift in relative prices.¹⁵

¹³ Level 3 Provider Decl. ¶ 7.

¹⁴ Windstream Decl ¶ 33; **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[END HIGHLY CONFIDENTIAL]

¹⁵ Windstream Decl ¶ 24; **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[END HIGHLY CONFIDENTIAL] The issue for market definition is the extent to which customers would substitute between dedicated services and best efforts broadband in the event dedicated services prices changed by a small amount, not whether best efforts broadband takes customers from dedicated services as best efforts broadband quality increases and prices decline. *See FTC v. Whole Foods* (D.C. Cir. 2007) (Tatel, J., concurring) (“[W]hen the automobile was first invented, competing auto manufacturers obviously took customers primarily from companies selling horses and buggies, not from other auto manufacturers, but that hardly shows that cars and horse-drawn carriages should be treated as the same product market.”).

Accordingly, the growth in demand for best efforts broadband by small retail customers and some mid-sized customers does not justify expanding a dedicated services product market to include best efforts broadband.

33. Best efforts broadband also lacks the availability, reliability, security, and dedicated bandwidth demanded by wholesale customers of dedicated services (such as the buyer in example (d)). Wholesale customers seeking a last-mile connection or transport connection when putting together a dedicated services offering for their retail customers rarely use a best efforts broadband connection to fill in for a connection they seek, and would not change their views in response to a small change in the relative prices of those connections.¹⁶

2) Exclusion of Fixed Wireless Services

34. Fixed wireless services are also excluded from the product market. For retail customers in buildings (such as the buyers in examples (a) and (b)), fixed wireless **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]

[REDACTED]

[REDACTED] **[END HIGHLY**

CONFIDENTIAL]¹⁷ But fixed wireless is not generally viewed as a

¹⁶ Declaration of Gary Black, Jr. on behalf of Level 3 Communications, Inc. (Level 3 Purchaser Decl.) ¶¶ 16-17 (Level 3 generally cannot use best efforts broadband Internet service to provide its own retail services).

¹⁷ See Windstream Decl. ¶ 35; Level 3 Purchaser Decl. ¶ 20; Declaration of George Kuzmanovski (XO) ¶ 36.

substitute in these settings because of reliability issues arising from congestion, interference and rain fade; the necessity of locating equipment with a clear line of sight; and building access problems.¹⁸ Products that are not substitutes for dedicated services over a wireline connection are properly excluded from the product market. Similar problems mean that fixed wireless is generally not a good substitute for wireless provider backhaul from cell towers (such as the buyer in example (c)).

C. Geographic Markets and Price Discrimination Markets

35. Customers of dedicated services provided over wireline, wholesale and retail, are tied to specific locations, and cannot substitute services located elsewhere. Nor would they relocate in response to a small increase in dedicated services prices at their existing location. Given relocation costs, it is difficult to imagine, for example, banks (example (a)), law firms (example (b)), cell towers (example (c)), or CLECs seeking last-mile connections (example (d)), responding to a small increase in the price of dedicated services at one location by moving their business to another location where prices are lower. Small differences in the price of dedicated services are similarly unlikely to matter materially to firms choosing initial locations (as with a law firm outgrowing its current space deciding where

¹⁸ See Windstream Decl. ¶¶ 36-37; Level 3 Purchaser Decl. ¶ 20; Level 3 Provider Decl. ¶ 23; Declaration of James Butman (TDS) ¶¶ 21-22, Attachment to Letter from Thomas Jones to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, RM-10593, GN Docket Nos. 13-5 & 12-353 (filed March 26, 2015); cf. Declaration of George Kuzmanovski (XO) ¶ 36 (XO has not seen a meaningful market for establishing wireless links in lieu of building fiber on a standalone basis).

to move).¹⁹ Accordingly, service to each customer location served by a dedicated connection – whether a specific office suite within a building, a particular cell tower, or the location of the channel term or local transport facility sought by a CLEC – is appropriately defined as a geographic market.²⁰ Defining individual customer locations as geographic markets does not rule out also defining broader geographic markets.²¹

V. Market Participants and Rivalry

A. Market Participants

36. Recognizing individual customer locations as geographic markets is not tantamount to identifying each incumbent seller as a monopolist of each customer.²² A firm currently making a sale at a customer location is a

¹⁹ Firms might consider the *availability* of the telecommunications services they desire in making location decisions, but the presence or absence of a service is equivalent to a price difference much greater than the small price change relevant to market definition.

²⁰ This geographic market definition is tantamount to defining a price discrimination market for dedicated services to each customer location. *Cf.* Federal Trade Comm'n & U.S. Dep't of Justice, *Commentary on the Horizontal Merger Guidelines* 8 (2006) (when appropriate, the antitrust agencies define individual customer procurements as separate price discrimination markets). This price discrimination market perspective recognizes that individual customers are targeted buyers to which price can be raised without inducing substantial demand substitution. That is, a hypothetical monopolist of dedicated services could discriminate in price against individual customers because it can identify them when setting prices, and customers subject to high prices cannot engage in arbitrage (purchase services indirectly from or through other customers that secure lower prices). (Arbitrage, such as the possibility that an Ethernet customer that has contracted for a large volume discount would resell to another tenant in its office building, is unlikely to be practical.)

²¹ *See* Jonathan B. Baker, *Market Definition: An Analytical Overview*, 74 Antitrust L.J. 129, 149 (2007) (smaller markets may be nested within larger ones); *id.* at 158 (markets may collect products that are not demand substitutes for analytical convenience, for example when market shares and entry conditions are similar for each or when data limitations effectively require use of the same proxy to estimate market shares across all products).

²² This discussion supposes that there is at least one incumbent seller. This report does not address competition to serve new customer locations not presently served by any provider (*e.g.*, through the construction of cell towers or office buildings).

market participant, along with what the Merger Guidelines term rapid entrants: firms not presently serving that location that can do so quickly and without substantial sunk expenditures (expenditures not recoverable upon exit).²³ For example, a CLEC may be able to serve customers at the location over owned or leased facilities, including a last-mile UNE leased from an ILEC.

37. CLECs often find it more economical to provide service to a new retail customer location through a UNE than by building facilities.²⁴ But a UNE may not be an available alternative, because of insufficient or insufficiently-conditioned facilities,²⁵ regulatory or contractual constraints,²⁶ or if the CLEC's operations are not collocated in the relevant ILEC wire center.²⁷ Furthermore, UNE loops (*e.g.*, DS1s and DS3s), have bandwidth limits, and UNE purchasers run a risk that those connections

²³ See *Suspension Order* at ¶199 (recognizing that the FCC can consider the impact of rapid entry using Merger Guidelines' approach to identifying market participants). Cf. Horizontal Merger Guidelines §5.1 (2010) ("If the relevant market is defined around targeted customers, firms that produce relevant products but do not sell them to those customers may be rapid entrants if they can easily and rapidly begin selling to the targeted customers.").

²⁴ When available, UNES are usually priced lower than other forms of dedicated last-mile connections offering comparable capacity. Windstream Decl. ¶¶ 56-57.

²⁵ Ethernet over "dry copper," for example, cannot be provided over loops with load coils, bridge taps, or repeaters, and must have copper from ILEC central office to the customer without use of a fiber feeder. Windstream Decl. ¶ 63.

²⁶ Windstream Decl. ¶¶ 57-58.

²⁷ *Id.* at ¶ 59.

will become unavailable.²⁸ For these reasons, providers serving end users with UNEs likely offer some competitive constraint on facilities-based providers, but only in some locations, only for some customers, and only to some extent.

38. CLECs may also lease dedicated services provided over non-UNE facilities from ILECs or CLECs.²⁹ But CLEC last-mile dedicated services connections (including cable) are not widely available.³⁰ Entry through leasing from an ILEC may be expensive, because the ILEC may have an incentive to raise wholesale prices to limit the possibility that the resulting retail competition would result in lower ILEC retail prices.³¹ Consistent with this view, ILECs often charge a high price for wholesale connections relative to the retail price they charge for similar connections.³² In

²⁸ *Id.* at ¶¶ 65, 67. This could happen, for example, if an ILEC retires a copper loop. It could also happen if the FCC, a state commission, or a court interprets or changes rules to narrow the unbundling requirement (for example, to eliminate the requirement to provide DS1 or DS3 capacity loops over fiber loops and/or loops that use IP-based transmission technologies).

²⁹ See **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[REDACTED] **[END HIGHLY CONFIDENTIAL]**

³⁰ Windstream Decl. ¶¶ 73-80; *see id.* at ¶ 81 (ILECs are the predominant source of all forms of dedicated services); Level 3 Purchaser Decl. ¶ 6 (ILECs are the only facilities-based provider of dedicated services to the vast majority of commercial buildings nationwide); **[BEGIN HIGHLY CONFIDENTIAL]**
[REDACTED] **[END HIGHLY CONFIDENTIAL]**

³¹ Where the ILECs have pricing flexibility or sell dedicated services not subject to ex ante price regulation (such as Ethernet), they may have the incentive and ability to charge a high wholesale price in order to reduce retail rivalry from the CLECs that lease dedicated connections from them. (That is, the ILEC may recognize a benefit from foreclosure (or, more generally, raising rivals' costs) when setting the wholesale price.) To similar effect, the regulated price for special access services that CLECs lease from ILECs or obtain as UNEs may be high relative to the retail price the CLEC receives.

addition, entry through leasing from an ILEC is often risky because ILECs generally preserve the ability to truncate connections before the end of the term.³³ For these reasons, dedicated services provided by leasing non-UNE connections would usually not be expected to constrain dedicated services prices, and the data analyses set forth below are unlikely to be biased by the absence of information on leased connections.³⁴

39. As discussed more fully below, in connection with the analysis of entry, a firm not presently serving a retail customer that wishes to provide service to that customer using its own facilities will generally need to undertake substantial sunk expenditures, and may not be able to do so quickly.³⁵ The most likely exception is a firm serving other retail

³² Windstream Decl. ¶¶ 91-95; **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[REDACTED] **[END HIGHLY CONFIDENTIAL]** ILECs often charge *more* for wholesale connections than for retail connections of the same type and contract term. Windstream Decl. ¶ 92. **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[END HIGHLY CONFIDENTIAL] Many PBDS connections were excluded from the data analysis because they were missing information on important characteristics (such as location or bandwidth) or reported that information inconsistently (such as reporting a single connection as having been purchased by different customers or as having different bandwidths within the same month). (Of course, wholesale prices can be set to have exclusionary effects whether or not they exceed the retail price.)

³³ Windstream Decl. ¶ 84.

³⁴ The data include locations with connections obtained as long-term leases through Indefeasible Right of Use (IRU) agreements. These connections have been treated as identical with owned connections in the data analysis below. The data do not report locations for non-UNE leased dedicated services connections, so these cannot be considered in the data analysis.

³⁵ In addition to the costs and delay associated with building a fiber ring and laterals, a provider not presently serving a retail location will frequently need to obtain building access and/or rights of way to reach the building.

customers in the same building with its own physical connection. Such a firm may be considered a rapid entrant for serving another customer at that location to which the CLEC wishes to sell (accounting for anticipated revenues), and thus viewed as a market participant in that geographic market.

40. It is possible that some firms with nearby fiber rings could be rapid entrants, but there are reasons to think otherwise. Unlike firms already serving customers in the same building, firms with nearby connections must undertake sunk facilities expenditures (on constructing the last-mile connection to a given building) and may require permission of the building owner and a local construction permit to do so (which may not be forthcoming or require additional sunk expenditures). After accounting for these and other costs, a recent study found that CLECs would not be able to obtain the revenue required in most business locations.³⁶ For these reasons, nearby fiber providers would be expected to offer less of a competitive constraint than providers already serving a building with their own facilities, and, in general, are better seen as potential entrants than as “rapid entrants” (as the Merger Guidelines use the term).³⁷

³⁶ The study found that a CLEC would not find it profitable to build out its own last-mile facilities unless it can attain substantial end user density and penetration. CostQuest, Analysis of Fiber Deployment Economics for Efficient Provision of Competitive Service to Business Locations, Attachment A to Letter from Jennie Chandra, Windstream Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 13-5 & 12-353, WC Docket Nos. 05-25 and 15-1, and RM-10593 (filed June 8, 2015).

³⁷ These possible entrants would need to be found close by. **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]

B. Market Rivalry

41. This section discusses what can be learned about market rivalry from the data on dedicated services connections for 2013 made available by the FCC from the Special Access Data Collection. These data are used in Section V.B(1) in a structural analysis comparable to what the FCC typically undertakes to assess market power, and in Section V.B(2) to analyze market power in a different way, by studying how prices change as the number of rivals (*i.e.* market participants) grows.

42. The FCC's data reports information for individual dedicated services connections. The data generally include, for each connection, its location, revenues billed, and the identity of its provider. The data also identify features of the connection that include, among other things, bandwidth, whether the connection is circuit-based (CBDS) or packet based (PBDS), and whether the customer is an end user or another provider.³⁸

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] [END HIGHLY CONFIDENTIAL] Windstream Decl. ¶ 57; [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL]

³⁸ A monthly price was constructed by summing the 'total_billed' variable for all line item charges on a monthly bill (*e.g.*, for mileage and termination) for a single connection, removing non-recurring charges and incorporating out of cycle adjustments or discounts where applicable, and averaging across all months for which a bill was provided. When providers did not follow the format of the FCC's data request, this process was modified based upon the providers' explanatory attachments and inferences from the appearance of the data. Connections with missing information, or with inconsistent information (such as a location or bandwidth that varied month to month), were excluded from the analysis. Observations that correspond to extreme prices (below the 1st percentile or above the 99th percentile for a given connection type (*e.g.*, DS1, or PBDS in the 100-500 Mbps bandwidth tier) were removed from the sample for the regression analyses only.

43. For the purpose of this report, a provider (ILEC or CLEC) currently providing dedicated service (other than through a leased connection) to the customer location (*i.e.* to any customer in the building) is termed an in-building provider.³⁹ A CLEC not currently providing service but with fiber nearby is termed a nearby provider. A provider is considered nearby if it is not presently providing service to the customer location but has fiber within either the same census block or a census block with a boundary less than 0.5 miles away.⁴⁰ For the reasons discussed above, in-building providers are considered market participants, while nearby providers are viewed as potential entrants.

(1) Number of Market Participants

44. In the great majority of customer locations, in the geographic markets identified above, only one firm provides service. **[BEGIN HIGHLY CONFIDENTIAL]** Nationwide, 77.3% of buildings in the FCC's data have one in-building provider and almost all of the rest

³⁹ A firm offering dedicated services to a building is counted as an in-building facilities-based provider if it either owns a connection or leases one through an IRU. The typical end user is served by only one dedicated services provider, but occasionally customers obtain service from multiple providers to increase reliability through redundancy.

⁴⁰ **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** Windstream Decl. ¶ 51; **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** see Declaration of James Butman (TDS) (filed March 26, 2015) ¶ 16 (TDS does not bid on projects to build fiber more than **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]** feet).

(20.8%) have only two in-building providers.⁴¹ If firms providing dedicated services through UNEs (leased from an ILEC) are counted, 58.4% of buildings have one in-building provider and 36.6% have two.⁴²

~~[END HIGHLY CONFIDENTIAL]~~ Measured either way, almost all buildings ~~[BEGIN HIGHLY CONFIDENTIAL]~~ (at least 95%) ~~[END HIGHLY CONFIDENTIAL]~~ have no more than two providers.⁴³

45. When there is only one in-building provider, moreover, it is nearly always the ILEC.⁴⁴ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ 





 ~~[END HIGHLY CONFIDENTIAL]~~

46. These statistics demonstrate that usually one firm, and almost always no more than two firms, serves most locations (geographic

⁴¹ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ 

 ~~[END HIGHLY CONFIDENTIAL]~~

⁴² ~~[BEGIN HIGHLY CONFIDENTIAL]~~ A clear majority of UNEs (63%) are supplied to buildings with only one facilities-based connection. ~~[END HIGHLY CONFIDENTIAL]~~

⁴³ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ With respect to a broader geographic region, 68.9% of Census blocks are served by only one facilities-based provider, and 26.6% are served by two. ~~[END HIGHLY CONFIDENTIAL]~~

⁴⁴ See Windstream Decl ¶ 26.

⁴⁵ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ 

 ~~[END HIGHLY CONFIDENTIAL]~~

markets) with dedicated services (a product market). Thus, the great majority of these markets are monopolies or duopolies.

47. The structure of these markets raises competitive concerns. In markets for dedicated services with a single provider – the majority of markets – the dedicated services monopolist would have the incentive and ability to charge a supracompetitive price.⁴⁶

48. Markets with two providers –most of the rest – are also unlikely to perform competitively. As a general matter, the economics literature recognizes that markets with more than one significant firm do not necessarily perform competitively, and that firms will likely exercise market power in markets with few market participants. That is the prediction of most common oligopoly models,⁴⁷ and the common finding of within-industry studies is that greater concentration leads to higher prices.⁴⁸

⁴⁶ This would not be the case if supracompetitive prices are prevented by regulation. That would not be possible in areas in which price flexibility has been granted. Whether supracompetitive pricing is prevented in the remaining areas depends on the effectiveness of price cap regulation.

⁴⁷ The primary exception, Bertrand competition with homogenous products and constant marginal costs, is unlikely to characterize directed service, and in any case would not apply when there is only one provider.

⁴⁸ See, e.g., Richard Schmalensee, *Inter-Industry Studies of Structure and Performance*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 988 (R. Schmalensee & R. Willig, eds. 1989) (Stylized Fact 5.1) (empirical survey); Leonard Weiss, *Conclusion*, in CONCENTRATION AND PRICE 266-89 (Leonard Weiss, ed. 1989) (empirical survey). For other within-industry examples relating concentration and prices, see, e.g., Timothy F. Bresnahan & Valerie Y. Suslow, *Oligopoly Pricing with Capacity Constraints*, 15/16 ANNALES D'ÉCONOMIE ET DE STATISTIQUE 267 (1989); Jonathan B. Baker, *Econometric Analysis in FTC v. Staples*, 18 J. PUB. POL'Y & MARKETING 11 (1999).

49. Moreover, in many cases, one of the two firms will provide no more than a limited constraint on the prices charged by the other. Most duopoly markets are served by an ILEC and a CLEC. Many CLECs experience substantial impediments to expanding output, including high marginal costs of serving another customer in a building. (These impediments are discussed below in Section V.B(2)(b)(ii).) Under such circumstances, the CLEC would not have an incentive to compete aggressively with the ILEC on price. For the same reason, some or all of the CLECs participating in the markets served by more than two providers may have limited incentive to compete aggressively in those locations.⁴⁹

50. Output expansion by rivals is unlikely to be substantial in most markets: there are no rivals in monopoly markets, one of the firms in a duopoly market may experience substantial impediments to expanding output, and some (and perhaps most) firms may experience substantial impediments to expanding output in the markets served by more than two firms. (Under such circumstances, the supply elasticity for rivals to ILECs would not be characterized as elastic.)

51. These considerations indicate that providers of dedicated services are likely able to exercise market power in most dedicated services markets, and would be expected to charge prices above competitive levels

⁴⁹ Put differently, it is likely that the count of firms participating in a market systematically overstates the number of *significant* rivals.

unless prevented by regulation. (The prospect of entry is unlikely to deter market participants from charging supracompetitive prices, for reasons discussed in Section VI below.) Moreover, the exercise of market power may also harm competition on non-price dimensions, as through reduced product quality, reduced product variety, reduced service, or diminished innovation.⁵⁰

52. The structural framework applied above is comparable to the market power analysis that the Commission has undertaken in other proceedings. Demand elasticity is accounted for in market definition; market rivalry is accounted for through the analysis of market structure (number of market participants) and the analysis of CLEC incentives to expand (which also accounts for the elasticity of supply by the ILEC's rivals); and entry is discussed below.

(2) Regression Analysis

53. The empirical analysis discussed below shows that ILEC prices to end users ~~[BEGIN HIGHLY CONFIDENTIAL]~~ tend to decline as the number of rivals selling dedicated services increase, and the price decline is generally more pronounced with multiple in-building rivals than with multiple nearby rivals. Moreover, as is also discussed below, the regression results are likely biased against identifying an inverse relationship between the number of rivals and price. Hence, the decline in

⁵⁰ U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines § 1 (2010).

price associated with additional rivals is likely greater than the reported results suggest. ~~[END HIGHLY CONFIDENTIAL]~~

54. A negative relationship between price and the number of rivals would be expected if firms exercise market power when they face few or no rivals. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Accordingly, these results do not call into question the conclusion derived from the analysis of market participants that dedicated services prices generally exceed competitive levels. ~~[END HIGHLY CONFIDENTIAL]~~

55. The regression model reported in Table 2 relates the price charged for a dedicated connection to the number of in-building and nearby facilities-based providers offering service at the customer's location (*e.g.*, to other customers in the same building). The independent variables include dummy variables that indicate the number of in-building and nearby rivals, separately,⁵¹ as well as a dummy variable that indicates whether the building is served by a provider that has leased a UNE.

56. The specification includes fixed effects that control for provider identity (and, for ILECs, provider price zones), customer location (identified by census tract), and service type (DS1, DS3, PBDS, and other CBDS). In addition, the specification includes dummy variables

⁵¹ Although most locations are served by no more than two providers, the large number of observations in the sample of ILEC retail prices (more than one million) provide enough data to estimate the incremental price effects of more than two firms. *Cf.* ~~[BEGIN HIGHLY CONFIDENTIAL]~~

~~[END HIGHLY CONFIDENTIAL]~~

identifying observable customer features (whether the provider also serves the customer at other locations, whether the customer purchases more than one connection, whether at least three additional end users at the same location also purchase dedicated services), and whether the connection was sold under a term and/or volume commitment. The specification also includes logarithm of bandwidth as a control variable.

(a) Summary of Results

57. Column (1) of Table 2 summarizes the results from estimating the primary specification, where the dependent variable is the log price of retail dedicated services connections sold by ILECs. The percentage changes in price from incremental facilities-based providers of the types indicated can be inferred from the regression coefficients reported in Table 2.⁵² **[BEGIN HIGHLY CONFIDENTIAL]** For example, an ILEC that sells a dedicated connection to a customer in a building served by four or more in-building providers (three or more aside from it) charges on average 12.2% less than if it were served by three in-building providers, and 12.35% (0.10% + 0.05% + 12.2%) less than if the ILEC had no in-building rivals – in both cases holding constant the number of nearby rivals. **[END HIGHLY CONFIDENTIAL]** The cells that indicate the

⁵² The regression coefficients reported in Tables 2 and 3 may be converted into percentage changes using the formula: **[BEGIN HIGHLY CONFIDENTIAL]** percentage change equals $[\exp(\alpha)-1]*100$, where α is the regression coefficient. Because most coefficients are close to zero, the percentage change is approximately $\alpha*100$. For ease of comparison with the coefficients, this approximation has been employed when percentage changes are discussed. **[END HIGHLY CONFIDENTIAL]**

incremental price change from providers nearby are interpreted similarly.

~~[BEGIN HIGHLY CONFIDENTIAL]~~ Hence, if three additional providers are nearby, the ILEC's price would, on average, be an additional 2.28% lower ($1.37\% - 0.02\% + 0.93\%$), so the ILEC's price would in total be 14.63% ($12.35\% + 2.28\%$) lower than what the ILEC would charge with no in-building or nearby facilities-based rivals.

58. The results presented in Column (1), the primary specification, show that ILEC prices tend to decline as the number of in-building providers increases. That is, the average price reduction is greater the more facilities-based providers are present in the building. The fourth additional provider leads to the greatest incremental reduction in price. The results also show that ILEC prices tend to decline as the number of nearby (CLEC) providers increases. In addition, the presence of a provider offering dedicated services through a UNE lowers the retail price by an additional 3.69% (for any given number of in-building and nearby providers).⁵³

59. In the primary specification, every additional provider (in-building or nearby) lowers price excepting the second nearby provider, with the

⁵³ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ In a specification not reported in the table, the presence of a provider offering dedicated services by UNE nearby (within the same census block but not within the building) was also associated with a price reduction. In this model, a firm offering dedicated services by UNE lowers the retail price by 4.15%, and the presence of a firm offering dedicated services by UNE nearby lowers price by 1.00%. The estimated price effects associated with in-building and nearby facilities-based rivals were nearly identical to those reported in the primary specification. ~~[END HIGHLY CONFIDENTIAL]~~

majority lowering price by an amount that is significant statistically.⁵⁴

This pattern indicates that prices tend to fall as the number of providers increases. The fixed effects and control variables generally have signs consistent with expectations.⁵⁵ The equation as a whole explains 64% of the variation in the dependent variable (R^2). The results reported for the primary specification are not very sensitive to other ways of accounting for bandwidth (using fixed effects for bandwidth tiers) or for location (zip codes); these specifications are not reported in the table.

60. Columns (2) and (3) of Table 2 report the results of estimating the same specification on broader samples: CLEC and ILEC retail prices in column (2) and ILEC wholesale and retail prices in column (3). Multiple coefficients on the number of in-building and nearby providers are negative and significant in these regressions, as they are in the primary specification, although some coefficients are not significant statistically, and one coefficient is positive and significant in each.⁵⁶

⁵⁴ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The sole positive coefficient was not significant statistically and small economically. Here, and with respect to all other columns in Tables 2 and 3, reported measures of statistical significance of estimated regression coefficients use a 5 percent significance level, calculated with robust standard errors. When the specifications were estimated with robust standard errors clustered on provider and location, some of the coefficient estimates in the primary specification became insignificant statistically. ~~[END HIGHLY CONFIDENTIAL]~~

⁵⁵ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The coefficients on the dummy variables for contract provisions (volume and term commitments), which are not reported in the table, may be an exception. The coefficients on number of providers exhibit only small changes if these fixed effects are removed. ~~[END HIGHLY CONFIDENTIAL]~~

⁵⁶ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ One of the two positive and significant coefficients lost statistical significance when the specifications were estimated with robust standard errors clustered on provider and location. ~~[END HIGHLY CONFIDENTIAL]~~

61. Columns (4) through (7) report the results of estimating the same specification on four subsamples based on the type of service: DS1, DS3, PBDS, and other CBDS. Again prices generally fall as the number of providers increases: all the coefficients that are significant statistically are negative with the exception of one in column (4). In addition, for DS3 connections, additional in-building providers are associated with markedly larger price reductions than in the sample as a whole.

62. The consistent inverse relationship that appears in the primary specification (all coefficients on variables accounting for additional providers are negative or insignificant) is also apparent when estimating the same regression specification on other subsamples not reported, including subsamples for both single and multi-location customers, both high and low building density regions (based on zip code), and MSAs in which the ILEC has a low share of connections, connections that can be identified as channel terminations, and regions in which the ILEC is subject to Phase I regulation. But one or more coefficients is positive and significant in other subsamples, including when the ILEC is subject to price cap or Phase II regulation and subsamples limited to CLEC retail prices, ILEC wholesale prices, and MSAs in which the ILEC has a high share of connections.⁵⁷

⁵⁷ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Most of the positive and significant coefficients lost statistical significance when the specifications were estimated with robust standard errors clustered on provider and location. ~~[END HIGHLY CONFIDENTIAL]~~

63. Although the estimated magnitude of an incremental provider varies across specifications, it is evident that additional providers make a difference economically. In the primary specification, the cumulative effect of four or more in-building providers (measured by summing the relevant coefficients) is a 12.35% reduction in price, and the cumulative effect of four or more nearby providers is an additional 3.68% reduction in price ~~[END HIGHLY CONFIDENTIAL]~~.⁵⁸ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The greater cumulative effect of in-building providers, which is generally consistent across the alternative specifications discussed above, suggests that in-building providers provide a greater competitive constraint, on average, than nearby providers. In the primary specification, the cumulative effect of four or more nearby providers is about the same as the 3.69% price reduction associated with a CLEC providing service by UNE.

64. Looking among the many specifications with the same coefficient pattern as the primary specification, in some cases the percentage change reported for a given incremental number of providers differs by several percentage points. This variation suggests limits to the precision with which the data analysis ties down the magnitude of specific coefficients ~~[END HIGHLY CONFIDENTIAL]~~.⁵⁹ ~~[BEGIN HIGHLY~~

⁵⁸ These cumulative effects are significant statistically.

⁵⁹ This could be the product of the many sources of potential bias, discussed below, which could affect the results in some samples more than in others.

~~CONFIDENTIAL~~] The main conclusions to be drawn from the specifications taken as a whole are that prices decline as the number of in-building providers increase; that prices decline as the number of nearby providers increase, but, most likely, not as much; and that prices decline with the presence of a provider offering dedicated services through a UNE.

65. The central feature of the reported results, that ILEC retail prices are lower when CLECs compete, is confirmed by analyzing the data in a different way. Instead of accounting for rivalry by separating out the effects of each incremental in-building and nearby provider, the analysis reported in Table 3 summarizes rivalry by including a dummy variable for the presence of *any* additional in-building provider and a dummy variable for the presence of *any* nearby rival. This approach does not demand that the data identify the incremental effects of each additional rival; it simply looks at whether rivalry of each type (and rivalry from providers serving customers with UNEs) lowers price. In all other respects, the specifications are the same as those previously reported: they include the same additional dependent variables and fixed effects, and statistical significance is measured using robust standard errors.

66. Table 3 reports the results of estimating these specifications for the samples studied previously. Every significant coefficient in each reported

specification but one is negative.⁶⁰ These equations explain about the same percentage of the variation in the dependent variable (R^2) as those reported in Table 1.⁶¹

67. The results reported in column (1) of Table 3 for ILEC retail prices, which are analogous to the primary specification in the prior analysis, show that the ILEC charges less when it competes with any type of rival: in-building, nearby, or UNE-based. This conclusion is consistent with the results reported in the remaining columns of Table 3 for other samples.

[END HIGHLY CONFIDENTIAL]

(b) Statistical Issues Affecting Interpretation

68. **[BEGIN HIGHLY CONFIDENTIAL]** The reported results almost surely understate the actual extent to which prices fall as the number of rivals rises. **[END HIGHLY CONFIDENTIAL]** Six reasons – unobservable customer heterogeneity, unobservable impediments to CLEC expansion, errors in measuring the price of dedicated services, multi-year ILEC contracts, unobservable wholesale customer switching costs, and ILEC wholesale pricing policies – are discussed below.

[BEGIN HIGHLY CONFIDENTIAL] These statistical issues mean that

⁶⁰ **[BEGIN HIGHLY CONFIDENTIAL]** The sole positive and significant coefficient lost statistical significance when the specifications in Table 3 were estimated with robust standard errors clustered on provider and location, as did some of the negative and significant coefficients reported in the table. **[END HIGHLY CONFIDENTIAL]**

⁶¹ **[BEGIN HIGHLY CONFIDENTIAL]** For example, the regressions reported in column (1) of each table each have an $R^2 = 0.64$. **[END HIGHLY CONFIDENTIAL]**

each additional rival is likely associated with a greater reduction in ILEC retail prices than was measured by the regression equations. They also explain why the absence of a clear relationship in the CLEC retail price data and the wholesale price data should not be interpreted as evidence against a negative relationship between the number of rivals and price.

~~[END HIGHLY CONFIDENTIAL]~~

i. Unobservable Customer Heterogeneity

69. First, a selection problem tied to customer heterogeneity observable to the providers but not to the econometrician implies that when the true relationship between price and rivalry is inverse, it will be difficult to detect that relationship in the data. In the Special Access data, some customer heterogeneity can be controlled for – the primary specification does so to some extent with indicators for multi-location customers, multi-connection customers, other customers at the customer’s location, and census tract – but these controls are imperfect and much unobservable customer heterogeneity likely remains. In particular, it is unlikely that the observable customer characteristics in the data set control well for a number of factors observable to the firms that may affect customer willingness to pay, such as the number of customer locations, type of business, character of managed services purchased, and past purchases of dedicated services.

70. The statistical bias that results from unobservable customer heterogeneity arises because rivalry is more likely (CLECs are more likely to enter) where customers have the highest willingness to pay for dedicated services (holding constant entry costs). A hypothetical example, with unrealistic numbers chosen to make the statistical issue transparent, will illustrate the point.

71. Suppose there are two types of customers. Type A customers have a high willingness to pay for dedicated services, and they would pay up to 20 for those services. Type B customers have a low willingness to pay; they would pay no more than 14 for the same services. Assume further that with perfect competition, customers of either type would be charged a price of 10, the cost of servicing the customer.

72. A dedicated services monopolist can price discriminate perfectly, and would charge each customer its willingness to pay. But price would be lower if there are more competitors. A Type A customer would pay 20 with only one firm seeking its business, and 16 with two firms competing. A Type B customer would pay 14 with one firm, and 12 with two firms.

73. With the cost of providing service to the customer equal to 10, an entrant would prefer to compete for Type A customers: it would earn a profit of 6 as the second firm serving Type A customers but would only earn 2 as the second firm serving Type B customers. Hence entry is more likely where the provider can compete for Type A customers.

74. In this example, the true relationship between price and the number of rivals is inverse, but the econometrician may not be able to detect it if he or she cannot tell the difference between Type A and Type B customers. Suppose, as suggested by the attractiveness of entry to serve Type A customers, two firms compete for the business of most Type A customers while one firm competes for the business of most Type B customers. Then the data will typically show that the price is typically 14 with one firm and typically 16 with two firms: it will appear, incorrectly, as though price rises slightly as the number of firms increase. More generally, even when the underlying relationship between price and the number of competitors is strongly inverse (lower price with more rivals), an econometrician unable to control fully for customer heterogeneity may observe a weakly inverse relationship, no relationship, or even a direct relationship (higher price with more rivals).⁶²

75. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The potential empirical significance of this bias is suggested by the difference between the reported retail ILEC price results for customers buying 10 to 50 Mbps connections and the results for customers buying higher bandwidth

⁶² This problem could be solved if the econometrician can tell which customers are of which type, and control for customer type in the regression analysis. Then it would be possible to observe that increasing the number of rivals from one to two leads to a drop in price from 20 to 16 for Type A customers and a decline from 14 to 13 for Type B customers. (The problem can also be viewed as an endogeneity issue: a failure to account for a second relationship between price and the number of rivals, in which higher prices attract rivalry. If entry is more likely when customers are Type A, exogenous factors related to whether a customer is Type A would be natural instrumental variables to use in estimating a relationship between price and number of rivals. Using such instruments would be like controlling for customer type.)

connections. The upper tail of the distribution of customer willingness to pay for these connections may be truncated relative to the distribution of customer willingness to pay for higher bandwidth connections.⁶³

Customers buying more than 50 Mbps service may tend to buy more complex managed services than customers buying less than 50 Mbps, and those that need complex managed services would tend to value dedicated services (their vehicle for obtaining managed services) more.⁶⁴ Consistent with this view, the estimated price effects of additional rivals, particularly in-building rivals, is substantially higher (economically) for the 10 to 50 Mbps bandwidth category (column (10)) than for the higher bandwidth tiers. ~~[END HIGHLY CONFIDENTIAL]~~

ii. Unobservable Impediments to CLEC Expansion

76. Second, unobservable impediments to CLEC expansion, including high marginal costs, would make it more difficult to detect an inverse relationship between rivalry and prices. As the examples below will

⁶³ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Most connections in the data (81.7%) have 0 to 10 Mbps bandwidth, so the distribution of customer willingness to pay in that subsample is likely similar to the distribution in the sample as a whole. The comparison in the text focuses on small subsamples (involving greater bandwidths) where differences in the distribution are more likely to be noticeable. ~~[END HIGHLY CONFIDENTIAL]~~

⁶⁴ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ In addition, customers buying less than 50 Mbps are more likely to be small and mid-sized businesses, which may be more likely to consider best efforts broadband a substitute in the event the price of dedicated services rises by more than a small amount. This would also cap the value that customers buying 10 to 50 Mbps connections would place on dedicated services. (This possibility is not inconsistent with excluding best efforts broadband from the dedicated services product market so long as the valuation cap exceeds the price of dedicated services by more than the small amount at issue in market definition.) ~~[END HIGHLY CONFIDENTIAL]~~

indicate, economically relevant elements of marginal cost extend beyond the costs of building new connections and deploying equipment.

77. CLECs may experience substantial impediments to expanding output in many regions, often for reasons observable to the providers but not to the econometrician. This will limit the number of locations where a greater CLEC presence would be associated with lower prices, making it more difficult to detect an inverse relationship between price and rivalry in the data.

78. A CLEC's marginal costs of expansion may be high where many customers require service at multiple locations, and the CLEC must rely on connections leased from ILECs to provide service at a substantial fraction of those locations. As previously discussed, ILECs have an incentive to raise the price of wholesale connections to limit retail competition,

[BEGIN HIGHLY CONFIDENTIAL] [REDACTED]

[REDACTED] **[END HIGHLY CONFIDENTIAL]**

79. In addition, a CLEC may experience impediments to output expansion to end users when the building owner refuses to grant the CLEC access or charges a high access fee, or when it is difficult or costly to obtain rights of way to a specific building (*e.g.*, pole access or costs of burying lines). These costs can vary substantially from building to building, even on the same block.

80. Unobservable differences across customers may also be understood as impeding a CLEC's expansion. CLECs focus expansion efforts on locations where customers offer the greatest potential revenues. When a customer that currently obtains dedicated services looks like a less attractive target to a CLEC for this reason, the CLEC may not compete for its business; it is as though the CLEC's cost of serving that customer (inducing it to switch from its current provider) is prohibitive. Hence the prices those customers are charged may be high even though other providers offer in-building service or have nearby fiber.

81. The geographic dummy variables in the regression analyses would control only imperfectly for these impediments to CLEC expansion, as these difficulties and costs are likely to vary across the buildings within a census tract, and may also vary across customers within a building. Hence locations where individual CLECs experience substantial impediments to expansion for these reasons would be unobservable to the econometrician to a substantial extent.

82. Where a CLEC that is present at a customer location or nearby faces significant impediments to output expansion for reasons such as these, that CLEC would not provide a substantial constraint on high prices charged by its rivals. Incumbents and other CLECs would not be expected to react to that CLEC's presence by lowering price (or to set up systems for quoting prices to prospective customers that would have this effect). Such

a CLEC may be a nominal rival but not a significant one (one that constrains prices). When a CLEC with significant impediments to expanding output at a location cannot be identified in the data, the count of the number of providers at or near that location will thus overstate the effective number of rivals. Hence the average estimated relationship between price and the presence of additional rivals will understate the consequences of increased CLEC rivalry for prices.

83. A hypothetical example, with unrealistic numbers chosen to make the statistical issue transparent, will illustrate the point. Suppose that there are three types of locations in the data. In the first type of location, no CLECs experience significant impediments to output expansion; all are significant rivals. In these locations, the presence of each additional CLEC leads to a 6% reduction in the price of dedicated connections relative to the price an ILEC monopolist would charge. In the second type of location, half the CLECs have significant impediments to expansion. All would be counted as rivals in the data analysis but only half would be significant rivals. In these locations, on average, the presence of each additional CLEC would appear to lead to a 3% reduction in the price of dedicated connections relative to the price an ILEC monopolist would charge. In the third type of location, all CLECs experience significant impediments to output expansion. All would be counted as rivals but none would be significant rivals. In these locations, the presence of each

additional CLEC leads to no observed reduction in the price of dedicated connections from the high price an ILEC monopolist would charge.

84. Suppose further that in the data overall, 10% of the locations are of the first type, 10% are of the second type, 80% are of the third type (no observed price reduction), and the type of location is unobservable to the econometrician. Then the econometrician would estimate that each additional CLEC would be associated with a 0.9% reduction in price ($6\% \times 10\% + 3\% \times 10\% + 0\% \times 80\%$). The econometrician would not be able to recognize that in 15% of the locations (all the locations of the first type and half the locations of the second type), rivalry from each additional CLEC leads to a 6% reduction in price (or, put differently, that adding a significant rival leads to a 6% reduction in price).

85. Moreover, in the example, the apparent result that each additional CLEC leads to a 0.9% reduction in the ILEC price, a figure that some might not consider large economically, does not imply that ILECs price competitively when they face few or no CLEC rivals. As the example shows, when many CLECs experience significant impediments to output expansion, estimating a small or negligible reduction in the ILEC's retail price associated with each additional CLEC is consistent with the exercise of market power by the ILEC; it should not be interpreted as indicating that potential rivalry from CLECs constrains ILEC pricing not to exceed competitive levels.

iii. Errors in Measuring Price

86. Third, errors in measuring the price of dedicated services may make it more difficult to detect in the data the relationship between rivalry and prices. When the prices of dedicated services are provided in the data, they are measured less precisely when those services are provided in conjunction with managed services than when the end user purchases no managed services in conjunction with transmission on a dedicated connection. The resulting measurement error in the dependent variable increases the difficulty of identifying any relationship in the data when a relationship is present.

87. When a provider sells a customer managed services along with a dedicated connection, the provider and customer may negotiate the price of both as a package. Prices may be quoted separately on the provider's bill,⁶⁵ but the customer is concerned primarily with the price of the package as a whole. Under such circumstances, allocation of the total price between the dedicated services component and the managed services for some providers may have an arbitrary element from an economic perspective.⁶⁶ This means that from the point of view of the data analysis,

⁶⁵ The provider sets the price of individual services recorded on the bill.

⁶⁶ **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[REDACTED]
[REDACTED] **[END HIGHLY CONFIDENTIAL]**

the prices of some dedicated services connections may be measured with error when the provider sells the customer managed services too.

88. Moreover, when the provider offers a customer a discount on the package of services the customer purchases in response to competition, it may prefer to allocate those discounts primarily to managed service components when preparing its bill, and quote a high price for the dedicated services component. The prices quoted for individual services may matter to some providers in the event that the customer drops some services at the end of the contract term, because the recorded price may be the starting point for a negotiation over the future price of the remaining services. Because dedicated services would be the last services a customer would drop, the provider may want to keep its price high.

89. For these reasons, the observed retail prices may tend to incorporate greater measurement error when the customer is purchasing managed services along with dedicated connections than when the customer is purchasing little or no additional services beyond dedicated services. Moreover, the observed retail prices may tend not to decline as rivalry increases even when that greater rivalry leads to a reduction in the price of the package of services sold to the customer. The measurement error increases the difficulty of isolating the relationship between prices and the number of providers when analyzing the data, and the disincentive to attribute discounts to the dedicated services component of the package

sold to the customer means that it will tend to appear as though price does not decline when the number of providers increases even though those rivals impose a substantial competitive constraint.

iv. Multi-year ILEC Contracts

90. Fourth, when ILECs have multi-year contracts with their retail or wholesale customers, the price recorded in the data will not reflect the competitive effects of additional rivals that emerge during the contract term. This will again make it more difficult to detect the full effect of additional rivalry on price.

91. When the ILEC has a multi-year contract, the ILEC's price recorded in the data would be set at the time the contract is entered into. If CLEC entry occurs during the term of the contract, the recorded price would not change; the influence of the additional rival on the ILEC's price would not be apparent in the data until the contract is renewed. If, for example, three-year ILEC contracts with customers are common, CLEC entry during the prior year would not affect the observed price for two-thirds of those customers; and CLEC entry the year before that would not affect the price for one-third of those customers.⁶⁷

92. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Thus, where multi-year ILEC contracts are common, ILEC price data, which is for a single year,

⁶⁷ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ [END HIGHLY CONFIDENTIAL]

would not reveal the full downward price effect of a new CLEC entrant. This possibility may be important in practice, as 24% of ILEC retail prices and 52% of ILEC wholesale prices reported in the data are for customers with five-year or longer contracts. ~~[END HIGHLY CONFIDENTIAL]~~

v. Unobservable wholesale customer switching costs

93. Fifth, some CLECs may have unobservable costs of switching wholesale providers arising from penalty clauses and loyalty discounts in ILEC wholesale contracts. If such a CLEC can obtain a substitute wholesale connection for less than it is paying the ILEC, it may not switch because that may trigger a penalty under its loyalty discount agreement with the ILEC.⁶⁸ Thus the wholesale price would remain at the level that the CLEC pays the ILEC regardless of whether other wholesale providers offer the connection for less. A CLEC's disincentive to switch away from an ILEC may also inhibit the incentive of other providers to offer discounts to induce the CLEC to do so. Hence the prices of wholesale connections would tend not to decline as the number of rivals grows, even if prices are above competitive levels and even if prices would be inversely related to the number of rivals in the absence of penalty clauses and loyalty discounts. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Accordingly, the absence of a clear inverse relationship between price and the number of

⁶⁸ Declaration of Gary Black, Jr. on behalf of Level 3 Communications, Inc. ¶¶13-24.

rivals in the data for wholesale prices (overall) should not be interpreted as disproving such a relationship, or as implying that wholesale prices are at competitive levels. ~~[END HIGHLY CONFIDENTIAL]~~

vi. ILEC Wholesale Pricing Policies

94. ILECs employ pricing policies that limit the cross-sectional variation in their wholesale prices. In particular, prices are often set identically across the buildings within the area served by a wire center or, to similar effect, buildings may be placed in a small number of price buckets.⁶⁹ These policies mean that the influence of wholesale rivalry on prices can best be measured in a data set with a time series component, and, thus, are unlikely to be observable in the FCC's Special Access Data, which is limited to a single year.⁷⁰ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ For this reason as well as others, the absence of a clear inverse relationship between price and the number of rivals for wholesale prices should not be interpreted as disproving such a relationship, or as implying that wholesale prices are at competitive levels. ~~[END HIGHLY CONFIDENTIAL]~~

(c) Interpreting the Regression Results

⁶⁹ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ ~~_____~~ ~~[END HIGHLY CONFIDENTIAL]~~. The ILECs may prefer not to vary prices across buildings within a region to economize on administrative costs. Another possibility is that the ILECs avoid negotiating the wholesale price for connections to individual buildings to discourage transactions with wholesale purchasers that compete with the ILECs at retail.

⁷⁰ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ ~~_____~~ ~~[END HIGHLY CONFIDENTIAL]~~

95. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The results reported in Tables 2 and 3 are consistent with the implications of the analysis of market structure: they show that greater rivalry leads to a lower price. ~~[END HIGHLY CONFIDENTIAL]~~ Moreover, each of the six statistical issues discussed above – unobservable customer heterogeneity, unobservable CLEC marginal cost, errors in measuring the price of dedicated services, multi-year ILEC contracts, unobservable wholesale customer switching costs, and ILEC wholesale pricing policies ~~[BEGIN HIGHLY CONFIDENTIAL]~~–works in the direction of muting or disguising an inverse relationship between price and the number of rivals (if any in fact exists). For this reason, increases in the number of rivals are likely associated with a greater reduction in ILEC retail prices than is indicated by the reported results. ~~[END HIGHLY CONFIDENTIAL]~~

VI. Entry

96. Entry of new competitors can counteract or deter the exercise of market power.⁷¹ This section focuses on the possibility of CLEC entry into the provision of dedicated services to end users in buildings, through the construction of new facilities. This might involve the construction of a lateral from an existing fiber ring to serve a customer location, or the construction of a new fiber ring along with laterals. The section explains

⁷¹ Consistent with the approach of the Merger Guidelines, this section is concerned with entry plans requiring significant sunk costs or more time than the “rapid entry” considered in identifying market participants.

why the prospect of entry is unlikely to deter incumbent providers from charging supracompetitive prices.

97. Entry involves substantial fixed expenditures, including the costs incurred to build a fiber ring and laterals and install electronics on the connections.⁷² The entrant may need a local construction permit, and permission from a building owner (in order to obtain building access). These are not always forthcoming, and even if they are, they add cost and delay, and may make entry prohibitively costly.⁷³ Costs also depend, among other things, on the length of the laterals and fiber rings built, the nature of the electronics added, whether the lines are buried, and local regulations (*e.g.*, a city may require replacement of cobblestones on scenic streets). Construction costs are typically higher in central business districts than in suburbs.⁷⁴

98. CLEC costs of adding new facilities are lowest when those rings and laterals extend existing facilities because the CLEC is able to obtain substantial scope economies by taking advantage of network equipment, transport facilities, and fiber rings previously deployed nearby.⁷⁵ For this

⁷² These fixed costs are the main reason for scale economies in the provision of dedicated services.

⁷³ Declaration of George Kuzmanovski (XO) ¶¶ 29, 32.

⁷⁴ *See generally* Windstream Decl. ¶ 51 [BEGIN HIGHLY CONFIDENTIAL] [REDACTED]
[REDACTED] [END HIGHLY CONFIDENTIAL]

⁷⁵ As discussed previously, in connection with defining nearby providers for the purpose of the regression analysis, CLECs typically do not deploy fiber to buildings more than a short distance from their fiber rings.

reason, CLECs are more likely to find it profitable to build new dedicated services facilities in proximity to existing ones.⁷⁶ Facilities-based entry at a distance from existing facilities (including cities not previously served at all) does occur, but when it does it is typically opportunistic, undertaken to serve unusually attractive customers, so not inconsistent with this generalization.

99. In addition to costs, entrants consider the potential revenue they could earn from prospective customers when evaluating entry opportunities.⁷⁷ Customers vary in the bandwidth the customer requires, the number of locations they wish to be served, and the types of services they demand. All of these, and other factors, influence the potential revenue. Moreover, customers prefer to work with CLECs that have a strong reputation for reliability and customer service. This customer preference limits the potential revenues available to CLECs that are not already established.

100. After accounting for costs, a recent study found that CLECs would not be able to obtain the revenue required to justify new construction in

⁷⁶ [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL]; *cf.* Declaration of James Butman (TDS) (filed March 26, 2015) ¶¶ 7-14 (CLEC building costs are greater than ILEC building costs in part because ILECs have facilities closer to customer locations).

⁷⁷ *See, e.g.*, [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL]

most business locations.⁷⁸ Construction of last-mile facilities along with a fiber ring would not be profitable in a representative example unless the CLEC can obtain at least a single 1 Gbps customer, three 50 Mbps customers, or seven 10 Mbps customers at each customer location;⁷⁹ in general, this will only be feasible in urban centers.

101. Beyond the costs addressed in that study, certain CLECs bear other costs arising from ILEC penalty clauses and loyalty discount provisions in their wholesale contracts. The contracts may in practice commit those CLECs to pay for a wholesale connection even after switching the customer over to its own connection.⁸⁰

102. CLEC entry also involves at least two important risks. The first is whether the CLEC can obtain the dedicated services business of enough customers (among the potential customers likely to generate sufficient revenues) to make entry profitable, even if they add a lateral connection to a building with many potential customers that may be interested in dedicated services or extend a fiber ring to a neighborhood where

⁷⁸ The study found that a CLEC would not find it profitable to build out its own last-mile facilities unless it can attain substantial end user density and penetration. CostQuest, Analysis of Fiber Deployment Economics for Efficient Provision of Competitive Service to Business Locations, Attachment A to Letter from Jennie Chandra, Windstream Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 13-5 & 12-353, WC Docket Nos. 05-25 and 15-1, and RM-10593 (filed June 8, 2015) (*CostQuest Analysis*).

⁷⁹ *Id.* at 5. "Revenue from multiple lower-speed circuits sold to customers in a single building, aggregating to less than 1 Gbps, may exceed the cost of deployment, because market prices per Mbps are higher for lower capacity circuits." *Id.* at 5 n.3.

⁸⁰ Declaration of George Kuzmanovski (XO) ¶19 (XO generally declines to build facilities when doing so will increase its risk of falling short of a minimum purchase requirement under an ILEC commitment plan).

buildings have many potential customers. This risk can be mitigated to some extent by contracting with customers in advance of construction. CLEC efforts to manage this risk restrict the locations in which CLEC entry would be profitable.⁸¹

103. A second important risk is the threat of customer opportunism. CLEC contracts with customers are commonly no longer than three to five years; this term is substantially shorter than the typical lifetime of new facilities. Once the contract term ends, the customer is typically in a strong bargaining position with the CLEC, because the CLEC's entry will usually mean that the customer has a choice of dedicated services providers (generally also including an ILEC) at the time of renewal. For this reason, some CLECs assume, in evaluating the profitability of prospective entry, that end users will not contribute to CLEC profits much, if at all, beyond the term of their initial contract.⁸²

104. To address these risks, CLECs commonly evaluate entry by requiring a short payback period (roughly comparable to the term of initial customer contracts) or, to similar effect, by demanding a high internal rate

⁸¹ **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED] **[END HIGHLY CONFIDENTIAL]**

⁸² Future profits would be non-existent if the end user switches providers or low if it uses that threat to negotiate a low rate. The CLEC's bargaining position at time of contract renewal would be stronger if its customers make sunk investments in the relationship. Whether its customers do so may depend on the nature of the services the customer purchases in addition to dedicated connectivity. CLECs will prefer to serve customers more likely to be "sticky" for that reason. But this possibility is not sufficiently common to incorporate into CLEC entry analyses.

of return.⁸³ Doing so has the effect of limiting entry by these CLECs to locations where they can target customers likely to generate high revenues. 105. The costs, risks, and difficulties for entry set forth above mean that entry would not be profitable in most locations,⁸⁴ and in those locations where it is most likely to be profitable (putting aside unusual opportunities to serve specific and particularly profitable customers), CLECs with nearby facilities, sales forces in place, and established reputations are the most likely potential entrants. These assets are scarce, so the pool of plausible potential entrants in the urban center locations where facilities-based entry is likely to be profitable is small. Consistent with this conclusion, in the urban centers of six major metropolitan areas studied,⁸⁵ **[BEGIN**

HIGHLY CONFIDENTIAL] [REDACTED]

[REDACTED] **[END HIGHLY**

CONFIDENTIAL].⁸⁶

⁸³ **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[END HIGHLY CONFIDENTIAL]

⁸⁴ See Windstream Decl. ¶ 45 **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[REDACTED] **[END HIGHLY CONFIDENTIAL]**

⁸⁵ These cities included Chicago, Minneapolis, Rochester, Nashville, Tampa, and Washington D.C.

⁸⁶ **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

106. **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] **[END**

HIGHLY CONFIDENTIAL] Even in urban centers, one would expect to see incumbents charging supracompetitive prices and accommodating limited entry.

VII. Conclusion

107. The structure of dedicated services markets indicates that ILECs are likely able to exercise market power in most markets, and would be expected to charge prices above competitive levels unless prevented by regulation. This conclusion is consistent with the statistical analysis of the data provided through the FCC's Special Access Data Collection, which indicates that ILEC retail prices are lower when CLECs compete with them and that ILEC retail prices tend to decline as the number of rivals selling dedicated services increases.

[REDACTED] **[END HIGHLY CONFIDENTIAL]**

Table 1

[BEGIN HIGHLY CONFIDENTIAL]

Share of Buildings Based on Location Data

Number	Share of Buildings with			
	1 Provider	2 Providers	3 Providers	4+ Providers
<i>Share of Buildings by In-Building Providers</i>				
1,250,075	77.3%	20.8%	1.5%	0.5%
<i>Share of Buildings by In-Building Providers (including UNEs)</i>				
1,250,075	58.4%	36.6%	3.7%	1.4%
<i>Share of Census Blocks by Number of In-Building Providers</i>				
651,834	68.9%	26.6%	3.2%	1.3%

Includes all locations with addresses that have valid zip codes. Census block figures are based only on those locations where a latitude and longitude could be used to identify a census block.

[END HIGHLY CONFIDENTIAL]

Table 2

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Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	ILEC retail prices	All retail prices	All ILEC prices (retail & wholesale)	ILEC retail prices for DS1	ILEC retail prices for DS3	ILEC retail prices for PBDS	ILEC retail prices for Other CBDS	ILEC retail prices for 10 Mbps	ILEC retail prices for 10-50 Mbps	ILEC retail prices for 50-100 Mbps	ILEC retail prices for 100-500 Mbps	ILEC retail prices for 500-1000 Mbps	ILEC retail prices for 1000+ Mbps
2nd in-building provider	-0.00104 (0.00171)	0.000905 (0.00195)	0.00451* (0.00137)	0.00765* (0.00119)	-0.122* (0.0299)	-0.0475* (0.0116)	-0.168 (0.184)	0.00634* (0.00127)	-0.0565* (0.0179)	-0.0261* (0.0123)	0.0124 (0.0504)	-0.243* (0.106)	0.0434 (0.0296)
3rd in-building provider	-0.000489 (0.00343)	0.0255* (0.00310)	-0.0100* (0.00255)	-0.00905* (0.00241)	-0.0828* (0.0394)	0.0608* (0.0190)	0.245 (0.274)	-0.00861* (0.00257)	-0.0556* (0.0255)	0.0205 (0.0173)	0.0389 (0.0880)	0.280* (0.127)	0.0194 (0.0488)
4th (or more) in-building provider	-0.122* (0.00472)	-0.0418* (0.00354)	-0.0502* (0.00319)	-0.0633* (0.00351)	-0.248* (0.0456)	-0.0851* (0.0218)	-0.371 (0.211)	-0.0911* (0.00376)	-0.270* (0.0308)	0.0119 (0.0185)	-0.169 (0.104)	-0.0383 (0.119)	-0.316* (0.0980)
1st nearby provider	-0.0137* (0.00394)	0.00478 (0.00387)	-0.0224* (0.00335)	-0.0146* (0.00293)	0.102 (0.125)	0.0191 (0.0264)	0.366 (0.256)	-0.0136* (0.00311)	0.0518 (0.0687)	-0.00281 (0.0281)	-0.0114 (0.0416)	-0.555* (0.242)	0.0581 (0.0356)
2nd nearby provider	0.00220 (0.00302)	0.00227 (0.00307)	0.00364 (0.00257)	-0.00318 (0.00227)	-0.152 (0.0785)	0.0254 (0.0203)	-1.145* (0.462)	-0.00267 (0.00237)	-0.0962 (0.0491)	-0.0251 (0.0259)	-0.0459 (0.0628)	0.150 (0.198)	-0.0683 (0.0391)
3rd nearby provider	-0.00933* (0.00288)	-0.0128* (0.00281)	0.00153 (0.00246)	-0.00431* (0.00211)	-0.0107 (0.0684)	-0.0463* (0.0200)	0.224 (0.413)	-0.00398 (0.00222)	-0.0263 (0.0417)	-0.0605* (0.0264)	-0.0455 (0.0875)	-0.0365 (0.203)	0.0265 (0.0387)
4th (or more) nearby provider	-0.0160* (0.00262)	-0.00914* (0.00268)	-0.0162* (0.00219)	-0.00865* (0.00191)	0.0374 (0.0573)	-0.0150 (0.0176)	-0.0818 (0.293)	-0.0133* (0.00201)	0.0134 (0.0344)	0.0106 (0.0224)	-0.0189 (0.0798)	0.161 (0.136)	-0.00807 (0.0392)
CLEC providing service by UNE	-0.0369* (0.00198)	-0.0331* (0.00210)	-0.0337* (0.00149)	-0.0232* (0.00140)	-0.0487 (0.0303)	-0.0132 (0.0122)	0.211 (0.168)	-0.0285* (0.00151)	-0.0720* (0.0188)	-0.00742 (0.0122)	-0.0853 (0.0627)	-0.00340 (0.0839)	0.00160 (0.0694)
Observations	1,125,029	1,826,362	1,988,419	963,116	48,988	108,015	4,910	992,187	67,838	28,891	13,816	12,570	9,727
R-squared	0.643	0.595	0.611	0.612	0.590	0.624	0.664	0.606	0.556	0.774	0.629	0.736	0.929

Notes: Robust standard errors in parentheses.

* indicates the coefficient is statistically significant at the 5% level

All regressions include fixed effects for building's census tract, provider identity, and service type as well as logarithm of bandwidth and dummy variables for volume and term commitments, whether the provider also serves the customer at other locations, whether the customer purchases more than one connection, and whether at least three additional end users at the same location also purchase dedicated services.

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Table 3

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Regression Results for Alternative Specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	ILEC retail prices	All retail prices	All ILEC prices (retail & wholesale)	ILEC retail prices for DS1	ILEC retail prices for DS3	ILEC retail prices for PBDS	ILEC retail prices for Other CBDS	ILEC retail prices for 0-10 Mbps	ILEC retail prices for 10-50 Mbps	ILEC retail prices for 50-100 Mbps	ILEC retail prices for 100-500 Mbps	ILEC retail prices for 500-1000 Mbps	ILEC retail prices for 1000+ Mbps
Any in-building provider	-0.0114* (0.00160)	0.00443* (0.00197)	-0.00284* (0.00128)	0.00116 (0.00113)	-0.217* (0.0269)	-0.0382* (0.0105)	-0.174 (0.161)	-0.00235 (0.00120)	-0.134* (0.0163)	-0.0123 (0.0116)	0.00197 (0.0471)	-0.131 (0.0909)	0.0402 (0.0283)
Any nearby provider	-0.0192* (0.00380)	0.00197 (0.00374)	-0.0276* (0.00322)	-0.0192* (0.00283)	0.0320 (0.119)	0.0192 (0.0255)	0.0282 (0.0962)	-0.0190* (0.00299)	0.00410 (0.0654)	-0.0201 (0.0265)	-0.0405 (0.0423)	-0.492* (0.245)	0.0317 (0.0328)
CLEC providing service by UNE	-0.0450* (0.00199)	-0.0343* (0.00211)	-0.0374* (0.00149)	-0.0271* (0.00141)	-0.100* (0.0301)	-0.0181 (0.0120)	0.210 (0.173)	-0.0339* (0.00152)	-0.118* (0.0186)	0.00132 (0.0114)	-0.110 (0.0631)	0.0449 (0.0804)	-0.0518 (0.0709)
Observations	1,125,029	1,826,362	1,988,419	963,116	48,988	108,015	4,910	992,187	67,838	28,891	13,816	12,570	9,727
R-squared	0.642	0.595	0.611	0.611	0.589	0.624	0.663	0.605	0.553	0.773	0.628	0.736	0.929

Notes: Robust standard errors in parentheses.

* indicates the coefficient is statistically significant at the 5% level

All regressions include fixed effects for building's census tract, provider identity, and service type as well as logarithm of bandwidth and dummy variables for volume and term commitments, whether the provider also serves the customer at other locations, whether the customer purchases more than one connection, and whether at least three additional end users at the same location also purchase dedicated services.

{END-HIGHLY-CONFIDENTIAL}

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Table 4

[BEGIN HIGHLY CONFIDENTIAL]



[END HIGHLY CONFIDENTIAL]

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I declare under penalty of perjury that the foregoing is true and correct to the best of my information and belief.

A handwritten signature in blue ink, appearing to read "Jonathan B. Baker". The signature is fluid and cursive, with a large initial "J" and "B".

Jonathan B. Baker

Executed on January 22, 2016

REDACTED - FOR PUBLIC INSPECTION

ATTACHMENT B

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Special Access Rates for Price Cap Local) WC Docket No. 05-25
Exchange Carriers)
)
AT&T Corporation Petition for Rulemaking to) RM-10593
Reform Regulation of Incumbent Local)
Exchange)
Carrier Rates for Interstate Special Access)
Services)

**REPLY DECLARATION OF JONATHAN B. BAKER ON MARKET POWER IN
THE PROVISION OF DEDICATED (SPECIAL ACCESS) SERVICES**

I. Introduction

1. I have been asked by three competitive local exchange carriers (CLECs) – Level 3 Communications, Windstream, and XO Communications – to reply to various comments submitted in this proceeding on or around January 27, 2016. This reply supplements the declaration I submitted then.¹

2. Section II of this reply explains why the presence of competitive local exchange carriers (CLECs) with facilities near but not within buildings does not change my view that incumbent local exchange carriers

¹ Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (dated Jan. 22, 2016) (attached to Letter from Jonathan B. Baker to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Jan. 27, 2016) (Baker Decl.).

(ILECs) would be expected to charge supracompetitive prices to customers in those buildings. Section III explains that a market is not automatically competitive simply because sellers obtain business by negotiating with buyers. Section IV discusses the incentive and the ability of ILECs to foreclose CLECs and harm retail competition by charging high wholesale prices. Section V concludes.

II. Nearby CLECs Do Not Prevent Supracompetitive ILEC Prices

3. Most buildings in which one or more customers purchase dedicated services are served by a single firm, almost all are served by no more than two firms, and when there is only one in-building provider, it is nearly always an ILEC.² In the special access data made available by the FCC, most markets (defined as dedicated services provided over a wireline connection to a customer location³) are either ILEC monopolies or duopolies served by an ILEC and a CLEC.⁴ In their comments in this proceeding, the ILECs raise the possibility that competition from potential entrants – CLECs not providing service within a building but with fiber

² Baker Decl. ¶¶ 44-46.

³ Each customer location is appropriately defined as a geographic market, and providers offering service to any customer in a building are viewed as market participants serving that location. Baker Decl. ¶¶ 36-40. Defining individual customer locations as geographic markets does not rule out also defining broader geographic markets. *Id.* at ¶ 36 & ¶ 36 n.20.

⁴ Some CLECs are cable providers offering dedicated services.

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facilities near by – would prevent supracompetitive pricing in these monopoly and duopoly markets.

4. The ILECs count firms offering best-efforts broadband as providers (as well as counting CLECs with fiber facilities).⁵ But firms providing best-efforts broadband are not market participants because best-efforts broadband lacks service quality features required by most dedicated services customers and may lack the dedicated bandwidth (in both directions) those customers require.⁶ In addition, the ILECs assert that their conclusions are not contingent on counting cable connections.⁷ For these reasons, cable providers are not considered in-building providers or nearby providers in the analyses in this declaration unless they are offering dedicated services using fiber facilities.⁸

5. AT&T's comments are predicated on the assumption that so long as at least one CLEC within a census block provides dedicated services to a

⁵ Comments of Verizon (dated Jan. 27, 2016) (attached to Letter from Evan T. Leo to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Jan. 27, 2016) (Verizon Comments) at 38; *see* Comments of AT&T Inc. (dated Jan. 22, 2016) (attached to Letter from Christopher T. Shenk to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Jan. 27, 2016) (AT&T Comments) at 12-13; Mark Israel, Daniel Rubinfeld & Glenn Woroch, Competitive Analysis of the FCC's Special Access Data Collection (dated Jan. 26, 2016) (attached to Letter from Glenn Woroch to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25 (filed Jan. 27, 2016) (ILEC Economic Comments) at 16; Comments of CenturyLink (dated Jan. 28, 2016) (attached to Letter from Russell P. Hanser to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Jan. 28, 2016) at 9. More specifically, the ILECs count all firms identified on the National Broadband Map as DOCSIS 3.0 or Ethernet broadband providers. This broad definition includes, among other things, firms providing broadband service to residences (along with firms providing broadband service to businesses).

⁶ *See* Baker Decl. ¶¶ 31-33 (explaining why best efforts broadband is excluded from a product market defined as dedicated services provided over a wireline connection).

⁷ AT&T Comments at 15; ILEC Economic Comments at 6, 17.

⁸ Dedicated services provided by such firms are included in the FCC's special access data.

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building over its own facilities or has deployed fiber facilities, the price that an ILEC charges for dedicated services to any retail or wholesale customer within that census block is competitive.⁹ Verizon appears to assume that so long as at least one CLEC has deployed fiber facilities anywhere in a metropolitan area – a region much broader than a census block – prices are constrained to be competitive throughout the entire metropolitan area, or at least in those parts of the metropolitan area where demand is concentrated.¹⁰ The economic report referenced by the AT&T and Verizon comments supposes, similarly to what AT&T asserts, that a CLEC with a presence anywhere within a census block competes to serve all buildings within that block,¹¹ but is more cautious than AT&T in drawing out the implications of this supposition for prices.¹²

⁹ See AT&T Comments at 6 (“the presence of [sunk facilities deployed by competitors] ensures that ILEC prices will remain at just and reasonable levels and deters ILECs from attempting exclusionary or predatory pricing practices”), 7 (“it is not necessary that a competitor have a connection from its transport network to every single building in an area for that competitor to constrain ILEC prices in that area”), 16 (“even in the most unlikely extreme instance where a competitor has deployed only to a small corner of a census block, that competitor would generally be able to compete for the establishments that demand special access in the rest of the census block as well”).

¹⁰ See Verizon Comments at 20 (“facilities-based competitors typically enter markets at the level of a metropolitan area and not in small geographic areas like an individual office building or city block”), 21-22 (“when competitors announce the availability of their services, they do so in terms of broad geographic areas, such as entire metropolitan areas” and “deploy networks that are within reach of all or most of the concentrated demand within a given metropolitan area,” indicating that “competition is possible throughout that concentrated area”). Verizon appears to define areas where demand is concentrated variously as census blocks that account for 80% of U.S. business establishments, *id.* at 2, 25, or as those that account for the “majority” of high-capacity revenues. *Id.* at 22.

¹¹ ILEC Economic Comments at 4-5 (“even if only a single competitor has deployed facilities to just one building in a far corner of a census block, that competitor generally would be able to extend those facilities to all or most other buildings that have demand for special access services in that census block, and thus could compete for business at those other locations as well”).

¹² The ILEC Economic Comments state that multiple CLECs with nearby fiber (not just one), each making more than a limited investment, are needed to assure competitive prices. *Id.* at 8 (“when *multiple* carriers make *abundant* investments in sunk network facilities, competitive outcomes can be assured”) (emphasis

6. The ILECs are not correct in supposing that the presence of a nearby CLEC makes dedicated services markets competitive, and prevents ILECs from charging supracompetitive prices for dedicated services, for three reasons. First, it would be impractical and uneconomic for a CLEC to connect every potential dedicated services customer in every building in a census block with a fiber ring passing through that census block. The fiber ring might not even have a node in the census block; it may be configured to provide transport rather than to provide service to buildings. Even if it has a node, the node might not be close enough to every building in the census block for connection to be cost-effective, the ring may not have sufficient capacity to connect every building close to a node, the CLEC may be unable to obtain building access or rights of way, or it may not be profitable for the CLEC to serve the end users in some buildings.¹³ Not surprisingly, CLECs offer dedicated services in only [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL] of commercial buildings¹⁴ located in census blocks in which at least one CLEC reports that it serves dedicated services customers or reports that it has fiber facilities.¹⁵ Even in urban centers (where demand for dedicated

added). The ILEC Economic Comments do not indicate how many nearby firms would be sufficient to assure competitive pricing or how much investment by each would be required.

¹³ See Baker Decl. ¶¶ 97-104 (discussing impediments to facilities-based CLEC entry).

¹⁴ Commercial buildings are defined for this purpose as buildings with at least one dedicated services customer.

¹⁵ By contrast, the ILEC economists claim that CLECs have deployed facilities in [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL] of census blocks with special access (dedicated services) demand. ILEC Economic Comments at 16 & Tbl. C. They concede that when the

services within cities is likely on average the most concentrated), more than [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL] of buildings with a dedicated services connection are not served by *any* CLEC.¹⁶

7. Contrary to what the ILECs appear to suppose, a CLEC that has built a fiber ring near a building has not made all the sunk expenditures required to serve that building with its facilities. The additional sunk expenditures include the cost of the lateral, the cost of the electronics, and expenditures required to obtain building access. After accounting for these and other costs, a recent study found that CLECs would not be able to obtain the revenue required to justify entry in most locations.¹⁷ Hence, nearby fiber providers would be expected to offer less of a competitive constraint than providers already serving a building with their own

count is limited to CLECs offering dedicated services connections using fiber facilities (removing, among other things, cable providers offering best-efforts broadband, which are not market participants), this figure declines to [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL]. *Id.* at 17. The ILEC economists report penetration rates greater than [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL] because they erroneously assume that a CLEC could serve any dedicated services customer in any commercial building and would find it profitable to do so. Their additional claim that CLECs have deployed facilities in the census blocks that include nearly [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL] of the establishments with potential dedicated services demand, *id.* at 17 & Tbl. C, misleads for the same reasons.

¹⁶ In the urban center of the median of six cities (Chicago, Minneapolis, Rochester, Nashville, Tampa, and Washington D.C.), the FCC's special access data indicate that one or more CLECs served [BEGIN HIGHLY CONFIDENTIAL] [REDACTED] [END HIGHLY CONFIDENTIAL] of buildings with a dedicated services connection.

¹⁷ The study found that a CLEC would not find it profitable to build out its own last-mile facilities unless it can attain substantial end user density and penetration. CostQuest, Analysis of Fiber Deployment Economics for Efficient Provision of Competitive Service to Business Locations, Attachment A to Letter from Jennie Chandra, Windstream Corporation, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 13-5 & 12-353, WC Docket Nos. 05-25 and 15-1, and RM-10593 (filed June 8, 2015).

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facilities, and, in general, are better seen as potential entrants than as market participants.¹⁸

8. Second, when a CLEC is providing service to a multi-location customer, it frequently cannot reach every location with its facilities. Often some locations are served only by an ILEC's facilities.¹⁹ In order to serve those locations, and thus in order to compete for the multi-location customer's business, the CLEC must lease dedicated services from the ILEC at wholesale rates, or, if the option is available, add electronics to a suitable loop leased from the ILEC as an unbundled network element (UNE).²⁰

9. It can be costly and risky for CLECs to rely on an ILEC in order to serve some locations of multi-location customers. As discussed below in Section IV, ILECs often charge high wholesale prices for leased connections relative to retail prices, consistent with their incentive to limit retail competition from CLECs.²¹ CLECs leasing connections also bear

¹⁸ Baker Decl. ¶ 40.

¹⁹ Some such locations are outside areas where Verizon claims demand is concentrated, and thus are in areas that Verizon would not expect CLECs to serve. Other locations, whether inside or outside the areas where Verizon claims demand is concentrated, cannot be served by the CLEC for the reasons set forth in the previous two paragraphs. Moreover, CLEC last-mile dedicated services connections (including cable) are not widely available, Baker Decl. ¶ 38, so cannot be expected to provide alternative sources of wholesale connections.

²⁰ A UNE is often not available as an alternative. See Baker Decl. ¶ 37.

²¹ High wholesale prices for leased connections raise the CLEC's overall cost of serving a multi-location retail customer. This may discourage the CLEC from cutting price aggressively to win the customer's retail business and potentially make it uneconomic for the CLEC to serve the customer, even when the ILEC charges supracompetitive retail prices.

risks that the connections will become unavailable.²² Accordingly, even if potential competition from nearby CLECs were sufficient to prevent ILECs from exercising market power in providing dedicated services within a census block or area of concentrated demand, as the ILECs (erroneously) assume, such competition would still not be sufficient to prevent the ILECs from exercising market power in providing dedicated services to multi-location customers that have some locations within those areas and some locations outside them.

10. Third, the empirical analyses set forth in my initial declaration ~~[BEGIN HIGHLY CONFIDENTIAL]~~ indicate that multiple in-building providers, which are market participants, constrain ILEC retail pricing more than multiple nearby providers, which are potential entrants. ~~[END HIGHLY CONFIDENTIAL]~~²³ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ In the primary specification, the cumulative effect of four or more in-building providers in lowering ILEC retail prices is more than triple the cumulative effect of four or more nearby providers, and a CLEC providing service by UNE has about the same effect on ILEC retail prices as four or

²² Baker Decl. ¶ 37 (UNEs), ¶ 38 (non-UNE facilities).

²³ I measure the number of nearby providers using a slightly broader definition than that employed in the ILEC Economic Comments. I identify a CLEC as nearby a customer location if it is not presently providing service to the location but has fiber within either the same census block or a census block with a boundary less than 0.5 miles away. Baker Decl. ¶ 43. The ILECs count as nearby only those providers with facilities within the same census block. ILEC Economic Comments at 11. The regression results reported in Table 2 of my initial declaration are qualitatively similar if the ILEC's definition of nearby provider is used instead of the definition I employed (in both cases excluding connections recorded in the National Broadband Map data that the ILECs added to the special access data).

more nearby providers. ~~[END HIGHLY CONFIDENTIAL]~~²⁴ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Hence the limited competitive constraint on ILEC retail pricing from the potential entry of nearby CLECs does not substitute for competition from in-building providers, and is not sufficient to ensure that the ILECs set competitive retail prices. ~~[END HIGHLY CONFIDENTIAL]~~

III. “Bidding Markets” Are Not Necessarily Competitive

11. The ILEC Economic Comments describe markets for dedicated services (apparently both wholesale and retail, though that is not stated explicitly) as “bidding markets.”²⁵ This description appears intended to motivate their focus on the possible competitive significance of potential entry by nearby providers in constraining ILEC prices, discussed above.

12. Wholesale customers and larger retail customers purchasing dedicated services do often negotiate prices with firms selling those services (*i.e.* purchase from sellers “bidding” to supply them).²⁶ But that fact does not automatically make the markets competitive. Indeed, the very authority on bidding markets cited in the ILEC Economic Comments “explodes” the “myth,” which it describes as “heavily pushed by legal and

²⁴ Baker Decl. ¶ 63. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The reported results almost surely understate the extent to which prices fall as the number of rivals rises. ~~[END HIGHLY CONFIDENTIAL]~~ *Id.* at ¶ 68.

²⁵ ILEC Economic Comments at 8-9.

²⁶ Baker Decl. ¶ 20.

economic consulting firms,” that “in ‘bidding markets’, market share does not imply market power; that the existence of two firms is enough to imply perfect competition, or even that just one firm is enough.”²⁷ The market need not be perfectly competitive if some or all actual or potential rivals pose a limited competitive constraint, as when rivals experience impediments to expanding output.²⁸ Adding such a rival may make little difference to a dominant firm’s ability to maintain supracompetitive retail prices.

13. For this reason, characterizing markets for dedicated services as bidding markets does not mean that ILEC prices are competitive wherever CLECs are present nearby. CLECs may vary in the extent to which they constrain ILEC retail pricing, regardless of whether they provide dedicated services nearby a customer (potential entrants) or provide dedicated services to other customers in a building (market participants).²⁹ As detailed in Section II above, [~~BEGIN HIGHLY CONFIDENTIAL~~] the competitive constraint on ILEC retail pricing from the potential entry of nearby CLECs does not substitute for competition from in-building

²⁷ Paul Klemperer, Bidding Markets 4 (June 2005), <http://www.nuff.ox.ac.uk/users/klemperer/biddingmarkets.pdf>. Klemperer’s report is referenced in ILEC Economic Comments at 8 n. 15.

²⁸ More generally, sellers in markets where prices are determined by negotiation may differ in the competitive constraint they impose on each other because of differences in their costs and other competitive advantages such as product features or quality of service, differences in their information about each others’ costs and other competitive advantages, and differences in their information about buyer preferences. U.S. Dep’t of Justice & Fed. Trade Comm’n, Horizontal Merger Guidelines § 6.2 (2010).

²⁹ See Baker Decl. ¶¶ 78-79 (CLECs may experience impediments to expanding output).

providers and is not sufficient to ensure that the ILECs set competitive retail prices. ~~[END HIGHLY CONFIDENTIAL]~~

IV. ILECs Have an Incentive and the Ability to Foreclose CLECs and Harm Retail Competition by Charging High Wholesale Prices

14. When CLECs obtain dedicated connections or dedicated services in wholesale markets, they usually lease those services from an ILEC that also competes with them in providing dedicated services at retail.³⁰ Other markets are structured similarly: it is not uncommon for vertically-integrated firms (in this case, ILECs) to sell inputs (in this case, leased dedicated connections or dedicated services) to their downstream competitors (in this case, CLECs), even when the vertically-integrated firm is the primary or the only source of those inputs.³¹

³⁰ Baker Decl. ¶¶ 17-18; *see id.* at ¶ 16 (describing ways that CLECs may obtain the facilities it uses to provide dedicated services).

³¹ The Telecommunications Act of 1996 encouraged entrants to compete at retail with vertically integrated incumbent telephone providers by requiring the incumbents to make services and infrastructure available to new competitors at regulated rates. STUART MINOR BENJAMIN & JAMES B. SPETA, TELECOMMUNICATIONS LAW AND POLICY 224 (4th ed. 2015) (discussing statutory requirements for resale and unbundling of ILEC services and facilities). Competition between vertically integrated firms and downstream rivals to which they provide inputs is not limited to ILECs and CLECs. For example, Comcast, which accounts for a high share of video distribution in much of its cable footprint, provides NBCU content to video distributors (*e.g.* DISH) with which it competes. Franchisees such as fast-food or gasoline retailers often purchase key inputs from the company that owns the brand name, while located near company-owned outlets with which they compete. Manufacturers of durable products such as office equipment may sell replacement parts to independent service organizations, while also providing those parts to their own service departments which compete with the independents. In closely-related situations, an integrated firm may produce two products that must be used together, such as computers and peripheral equipment (*e.g.* printers), while a rival produces only one (*e.g.* printers). In such cases, the rival competes with the integrated firm but also relies on the integrated firm to sell the complementary product to its customers. (The two products that must be used together are demand complements from the perspective of the final customer. Upstream and downstream products are also demand complements, but the downstream firm bundles the upstream product before resale to the final customer.)

15. When a vertically-integrated firm sells a key input to its downstream rivals, it can exclude those rivals and harm retail competition by setting a high wholesale price relative to its retail price (*i.e.*, by creating a “price squeeze”).³² A vertically-integrated firm may employ this anticompetitive exclusionary strategy even when subject to downstream price regulation.³³

16. In dedicated services markets, an ILEC that benefits from foreclosing retail competition may recognize that benefit when setting the wholesale price where it has pricing flexibility or sells dedicated services not subject to *ex ante* price regulation.³⁴ By doing so, the ILEC can discourage aggressive retail price competition from CLECs or preclude such competition altogether, thereby preventing rivalry with CLECs from eroding the ILEC’s supracompetitive retail prices. In addition, by preventing retail competition, the ILEC may be able to prevent a CLEC from obtaining a “toehold” in the retail market that it might use in order to enter the wholesale market, and thereby maintain its market power at

³² Steven C. Salop, *Refusals to Deal and Price Squeezes by an Unregulated, Vertically Integrated Monopolist*, 76 *Antitrust L.J.* 709, 711 & 711 n. 7 (2010); MASSIMO MOTTA, *COMPETITION POLICY: THEORY AND PRACTICE* 491 (2004); JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 194 (1988).

³³ See Mark Armstrong & David E.M. Sappington, *Recent Developments in the Theory of Regulation*, in 3 *HANDBOOK OF INDUSTRIAL ORGANIZATION* 1557, 1681 (Mark Armstrong & Robert Porter, eds. 2007) (a vertically-integrated upstream monopolist subject to price regulation that gives it some downstream pricing flexibility can exclude efficient rivals and entrants from downstream competition through a price squeeze).

³⁴ Baker Decl. at ¶ 38 n. 31.

wholesale.³⁵ Consistent with these incentives, ILECs often charge high wholesale prices for leased dedicated services connections relative to retail prices for similar connections.³⁶

V. Conclusion

17. Nothing in the comments filed by any ILEC, or the ILEC Economic Comment, leads me to question the conclusion I reached in my initial report that ILECs likely exercise market power in most dedicated services markets and would be expected to charge prices above competitive levels unless prevented by regulation.

³⁵ Salop, *supra* note 32 at 711 n. 7.

³⁶ Baker Decl. ¶ 38 & ¶ 38 n. 32.

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I declare under penalty of perjury that the foregoing is true and correct to the best of my information and belief.

A handwritten signature in blue ink, appearing to read "Jonathan Baker". The signature is fluid and cursive, with the first name "Jonathan" and last name "Baker" clearly distinguishable.

Jonathan B. Baker

Executed on February 17, 2016

ATTACHMENT C

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Special Access Rates for Price Cap Local) WC Docket No. 05-25
Exchange Carriers)
)
AT&T Corporation Petition for Rulemaking to) RM-10593
Reform Regulation of Incumbent Local)
Exchange)
Carrier Rates for Interstate Special Access)
Services)

**SUPPLEMENTAL REPLY DECLARATION OF JONATHAN B. BAKER
ON MARKET POWER IN THE PROVISION OF
DEDICATED (SPECIAL ACCESS) SERVICES**

I. Introduction

1. I have been asked by Level 3 Communications and Windstream to respond to various comments submitted in these proceedings on February 19, 2016. This declaration supplements the two declarations I have previously submitted in these proceedings.¹

2. My initial declaration explained, based on an analysis of the structure of dedicated services markets, that providers of dedicated

¹ Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (dated Jan. 22, 2016) (attached to Letter from Jonathan B. Baker to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Jan. 27, 2016) (Baker Decl.); Reply Declaration of Jonathan B. Baker on Market Power in the Provision of Dedicated (Special Access) Services (dated Feb. 19, 2016) (attached to Letter from Jonathan B. Baker to Marlene H. Dortch, Secretary, FCC, WCC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (Baker Reply Decl.).

services are likely able to exercise market power in most markets, and would be expected to charge prices above competitive levels unless prevented by regulation.² My initial declaration also explained why this conclusion is consistent with the statistical analysis of the FCC's special access data. Section II of this reply explains why none of the criticisms of my statistical analysis in comments submitted by incumbent local exchange carriers (ILECs)³ leads me to question the conclusions I reached from analyzing those data: ~~[BEGIN HIGHLY CONFIDENTIAL]~~ (a) that ILEC retail prices are lower when competitive local exchange carriers (CLECs) compete with them, (b) that ILEC retail prices tend to decline as the number of rivals selling dedicated services increases, and (c) that the decline in price associated with additional rivals is likely greater than the reported results suggest, because the regression results are likely biased against identifying an inverse relationship between the number of rivals and price.⁴ ~~[END HIGHLY CONFIDENTIAL]~~

3. Section III discusses two non-statistical issues raised in reply comments: the ILEC economists' incorrect assumption that dedicated services markets are competitive if an ILEC competes with only one CLEC

² Baker Decl. ¶ 51.

³ Reply Comments of AT&T Inc., WC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (AT&T Reply Comments); Reply Comments of CenturyLink, WC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (CenturyLink Reply Comments); Reply Comments of Verizon, WC Docket No. 05-25, RM-10593 (filed Feb. 19, 2016) (Verizon Reply Comments).

⁴ Baker Decl. ¶ 8.

(which includes cable firms providing dedicated services), or if an ILEC competes with no CLECs but a CLEC has facilities; and an ILEC's incentive to raise wholesale prices in order to limit the possibility that the resulting retail competition would result in lower ILEC retail prices. Section IV briefly concludes.

II. ILEC Criticisms of My Statistical Analysis of the FCC's Special Access Data Do Not Change My Views

4. The ILECs, including the ILEC Economic Reply Comments,⁵ offer criticisms of my statistical analysis of the FCC's Special Access data in three main areas: the interpretation of the regression equations, the significance of missing data, and the direction of biases in the estimated coefficients. I discuss these in turn, and explain why none of these issues leads me to change my conclusions.⁶

A. Interpretation of Regression Equations

5. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The regression results reported in my initial declaration show a consistent inverse relationship between ILEC retail prices and the number of providers. In the primary

⁵ Declaration of Mark Israel, Daniel Rubinfeld and Glenn Woroch (Feb. 19, 2016) (Attachment A to AT&T Reply Comments) (ILEC Economic Reply Comments).

⁶ In addition, my initial declaration has a minor expositional error, called to my attention by Verizon. *See* Verizon Reply Comments at 28-29. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ In paragraph 58, the phrase "fourth additional provider" should have read "fourth provider." ~~[END HIGHLY CONFIDENTIAL]~~

specification, in similar specifications run on a number of subsamples, and in most of the reported results for the alternative regressions, all coefficients on variables accounting for the number of providers are negative or insignificant.⁷ ~~[END HIGHLY CONFIDENTIAL]~~ The ILECs' criticism of my interpretation of the regression results is based primarily on two features of those results that I also report: ~~[BEGIN HIGHLY CONFIDENTIAL]~~ in some subsamples and broader samples, one or more coefficients on variables accounting for the number of providers is positive and significant and some negative coefficients are insignificant;⁸ and there are limits to the precision with which the data analysis ties down the magnitude of specific coefficients.⁹ ~~[END HIGHLY CONFIDENTIAL]~~ This section also addresses several other issues with the interpretation of coefficients raised by the ILECs.

1. Variation in the Sign and Significance of Coefficients

6. Variation across regressions in the sign and statistical significance of the coefficients on variables that count the number of rivals does not

⁷ Baker Decl. ¶¶ 62, 66.

⁸ Baker Decl. ¶¶ 60, 62. *See* ILEC Economic Reply Comments ¶13 at 6 (“the results of the regression reported by Prof. Baker are a checkerboard of positive, negative and insignificant results”); *id.* at 7 (“When Prof. Baker computes standard errors by clustering by special access location and provider, ... he finds that many of the results in his analysis become statistically insignificant.”).

⁹ Baker Decl. ¶ 64. *See* Verizon Reply Comments at 29-30 (comparing the magnitude of individual regression coefficients within and across regressions); ILEC Economic Reply Comments ¶ 24 (same).

mean that the data are uninformative as to the relationship between the number of rivals and ILEC retail prices, contrary to what the ILECs suppose.¹⁰ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The reason is that the results presented in my initial declaration are biased away from finding an inverse relationship between the number of rivals and price.¹¹ That is, coefficients on the incremental number of providers in the regressions will tend to be upper bound estimates (less negative than the true values). There is no reason to expect the extent of the bias to be identical across samples. Hence, when all coefficients in a regression are negative or insignificant, as with the primary specification reported in my initial declaration, it is appropriate to conclude that the regression demonstrates an inverse relationship between the number of rivals and price. ~~[END HIGHLY CONFIDENTIAL]~~

2. The Magnitude of Specific Coefficients

7. The limits to the precision with which the data analysis ties down the magnitude of specific coefficients (which are evident from comparing the results of estimating alternative specifications), call for caution in

¹⁰ Compare ERNST R. BERNDT, *THE PRACTICE OF ECONOMETRICS: CLASSIC AND CONTEMPORARY* 160 (1991) ([T]he practicing econometrician in labor economics is typically forced to make use of data that are considerably less than ideal...[I]n spite of these serious measurement problems, much has been learned concerning the determinants of wages.”) with ILEC Economic Reply Comments ¶13 at 6 (the results “cannot be used to draw any specific inference about the relationship between special access competition and prices with any confidence”).

¹¹ Baker Decl. ¶¶ 68-95. If the true coefficients are negative, the estimated coefficients could be negative and smaller in magnitude, or positive. *Id.* at ¶ 74.

interpreting relative magnitudes of individual coefficients. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The regression results do not establish how many rivals are necessary to achieve competitive prices in the typical retail market,¹² in part for this reason.¹³ ~~[END HIGHLY CONFIDENTIAL]~~ Because the magnitude of the biases likely differs across samples, moreover, inferences made from comparing the magnitude of specific coefficients across regressions are unlikely to be correct.¹⁴ In addition, inferences made by comparing cumulative or average effects within or across regressions, both of which are derived from summing several regression coefficients, are likely to be more reliable than inferences made by comparing the magnitude of individual coefficients within or across regressions, contrary to what the ILEC economists suggest.¹⁵

¹² ~~[BEGIN HIGHLY CONFIDENTIAL]~~ My initial declaration observed that in the primary specification, “[t]he fourth [facilities-based] provider leads to the greatest incremental reduction in price.” Baker Decl. ¶ 58 (sentence corrected, as indicated *supra* note 6). This was a descriptive statement about the coefficients, not a claim about the number of in-building providers required for prices to be competitive, contrary to what the ILEC economists and AT&T suppose. ~~[END HIGHLY CONFIDENTIAL]~~ ILEC Economic Reply Comments ¶¶ 11, 18; AT&T Reply Comments at 12. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The regression results indicate that ILEC retail prices fall with the number of rivals, so provide no support for the claim, discussed below in Section III.A, that an ILEC prices competitively when it competes with only one CLEC, either in the same building or nearby. ~~[END HIGHLY CONFIDENTIAL]~~

¹³ In addition, many CLECs experience impediments to output expansion, so do not provide a substantial constraint on high retail prices charged by ILECs. Baker Decl. ¶ 82 (CLECs that face substantial impediments to output expansion would not constrain ILEC prices). The coefficient estimates average the incremental effects of rivals that provide limited and more substantial constraints on ILEC prices, *id.* at ¶ 84, so they understate the magnitude of the price reduction associated with a significant rival (one less subject to impediments to expansion).

¹⁴ Verizon makes inappropriate inferences by comparing the magnitudes of specific coefficients. Verizon Reply Comments at 28-29.

¹⁵ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ For example, it is reasonable to observe that “The greater cumulative effect of in-building providers, which is generally consistent across the alternative specifications ..., suggests that in-building providers provide a greater competitive constraint, on average, than nearby providers.” Baker Decl. ¶ 63. (In the primary specification, the cumulative effect of in-

3. Method of Testing Statistical Significance

8. My initial declaration reports significance tests based on robust standard errors, and, in the alternative, discusses significance tests based on clustering those standard errors on provider and location. Clustering was undertaken in the alternative as a robustness test.¹⁶ The ILEC economists prefer to rely on clustered standard errors.¹⁷

9. Nothing important to the interpretation of the regression results turns on the choice between the two approaches to testing statistical significance. That choice does not affect the magnitude of any estimated coefficient. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ As reported in my initial declaration, moreover, when the primary specification is estimated with clustered standard errors, all coefficients on variables accounting for the number of rivals remain negative or insignificant, though fewer are significant than when robust standard errors are not clustered. Hence the choice between standard errors does not call into question the key

building providers is more than triple the cumulative effect of nearby providers. *See id.*) ~~[END HIGHLY CONFIDENTIAL]~~ That inference is not called into question by the differences in the magnitudes of individual coefficients across various regressions that the ILEC economists point to. *See ILEC Economic Reply Comments* ¶ 24 (in many regressions, “the effect of a nearby competitor is ... larger than the effect of an in-building competitor”).

¹⁶ Clustering would be appropriate, for example, if the errors in measuring price across customers of the same provider within a location are expected to be correlated for reasons unobservable to the econometrician. Non-spurious correlations along these lines are possible, but the ILEC economists do not suggest any reason to expect them, so clustering is not necessarily appropriate when estimating the regression models I specified.

¹⁷ ILEC Economic Comments ¶ 41.

empirical finding, reported in my initial declaration, that the number of rivals is inversely related to price. ~~[END HIGHLY CONFIDENTIAL]~~

4. Nearby Rivals Absent In-Building Competitors

10. The ILEC economists also observe that the reported coefficients on the number of nearby rivals in my regression equations are averages of the effect of nearby rivals when there are many in-building competitors and the effect of nearby rivals when there are few or no in-building competitors. They are most interested in the effect of nearby rivals when there are few or no in-building competitors.¹⁸

11. In the FCC's Special Access Data, customers in the great majority of buildings have few or no in-building competitors. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ As I reported in my initial declaration, 77.3% of buildings have one in-building provider and almost all of the rest (20.8%) have only two in-building providers.¹⁹ ~~[END HIGHLY CONFIDENTIAL]~~ For that reason, the estimated coefficients on the number of nearby rivals are most likely dominated by the effect of nearby rivals when there are few or no in-building competitors – the effect the ILEC economists are most concerned to identify.

¹⁸ ILEC Economic Reply Comments ¶ 35.

¹⁹ Baker Decl. ¶ 44.

5. Regulatory Treatment

12. AT&T also contends that my results are not meaningful because they do not control for differences in regulatory treatment across regions (*i.e.*, whether the ILECs are subject to price caps or to phase I or phase II pricing flexibility).²⁰ To address that concern, I added fixed effects accounting for regulatory treatment to the primary specification. The coefficients on variables accounting for the number of rivals were similar to those reported for the primary specification in my initial declaration.²¹

13. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Moreover, when the primary specification was estimated on three subsamples differing by regulatory treatment (*i.e.*, for price cap, phase I, or phase II areas), all coefficients on variables related to the number of rivals were negative or insignificant when significance was tested using clustered standard errors, though a single coefficient was positive and significant in two of the subsamples when standard errors were not clustered.²² If, as the ILEC economists contend, significance tests based on clustered standard errors

²⁰ AT&T Reply Comments at 6. The ILEC economists also appear to suppose that ILEC prices cannot vary across customers in price cap areas. *See* ILEC Economic Reply Comments at 19. But the price caps do not apply to all dedicated services; many large ILECs offer Ethernet services outside of price caps. Moreover, an ILEC has an incentive to market its term discount plans to large retail customers in response to CLEC competition, and it can lower prices of regulated dedicated services in response to potential or actual CLEC entry by reengineering circuits to reduce channel mileage charges or by revising the boundaries of price zones. In addition, ILECs have pricing flexibility in phase I areas, even though price caps apply.

²¹ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The results also indicate that dedicated services prices are on average 6.2% lower in price cap regions than in the regions with phase I or phase II regulatory flexibility. ~~[END HIGHLY CONFIDENTIAL]~~

²² *See* Baker Decl. ¶ 62 & n. 57.

should be preferred, then these specifications each demonstrate an inverse relationship between the number of rivals and price. ~~[END HIGHLY CONFIDENTIAL]~~ Both approaches to accounting for regulatory treatment show that doing so does not change the results of my analysis or the conclusions I draw from it.

B. The Significance of Missing Data

14. The ILEC economists contend that two types of missing data make my regression results biased and unreliable.²³ First, the ILEC economists observe that prices are unavailable for some locations in the FCC's Special Access Data. Second, the ILEC economists claim that I undercount the number of rivals offering service in a building or nearby. For the reasons indicated below, neither of these issues causes me to question the conclusions I reached in my initial declaration.²⁴

²³ The ILEC economists also discuss a third possibility: measurement error from locations recorded in the data without an association with a specific building. ILEC Economic Reply Comments ¶ 32. If missing building associations were to bias estimates of the relationship between number of providers and ILEC retail prices, that bias would arise from undercounting the number of CLECs. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ But missing CLEC building associations account for only 2% of the locations in the data, so any such bias is likely to be small. ~~[END HIGHLY CONFIDENTIAL]~~

²⁴ The ILEC economists also say that in deriving a measure of price from the information supplied by providers, out-of-cycle adjustments or discounts should not have been included given that non-recurring charges were not included. ILEC Economic Reply Comments ¶ 28 n.21. Out-of-cycle adjustments were included on the view that they likely reflected, in substantial part, adjustments to prices (as from billing errors), while non-recurring charges more likely are unrelated to prices. Nothing important turns on the choice between the two methods of measuring price. When the primary specification was re-estimated with price measured with out-of-cycle adjustments excluded, as the ILEC economists propose, the estimated coefficients on variables accounting for the number of rivals were close to those reported in my initial declaration.

1. Missing Prices

15. The ILEC economists observe that measures of price may be unavailable in the FCC's Special Access Data for some locations where dedicated services are provided, and that locations reported by filers that have no reported prices are not distributed uniformly across regions and across providers.²⁵ If the distribution of missing prices is correlated with the price level, the estimated coefficients in my regression analyses would be biased if they are interpreted as describing the relationship between the number of rivals and price for all dedicated services.²⁶ The resulting sample selection bias could go in either direction.

16. Empirical tests show that this possibility is not a concern for interpreting the regressions presented in my initial declaration, as the regression results are not sensitive to the inclusion of states or providers with a relatively high proportion of missing prices. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ When the primary regression was estimated on a subsample limited to states with less than the median fraction of missing prices (none with more than 31% missing), the coefficients accounting for the number of rivals showed a similar inverse relationship to the

²⁵ ILEC Economic Reply Comments ¶ 30.

²⁶ The estimated coefficients would not be biased if interpreted as describing the relationship only for the locations where prices are available. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ Prices were available for 62% of locations in the data. ~~[END HIGHLY CONFIDENTIAL]~~ (This is a lower percentage than the ILEC economists report, presumably because of differences in the way the data were cleaned.) Not all locations would be expected to be associated with prices, as the data includes locations where providers were capable of offering service but were not actually doing so.

coefficients reported for the primary specification. [BEGIN HIGHLY CONFIDENTIAL] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [END HIGHLY CONFIDENTIAL]

2. Counting the Number of Rivals

17. The ILEC economists also claim that I systematically undercounted the number of in-building rivals because I excluded all connections supplied by cable companies.²⁸ This is incorrect. As indicated in my initial declaration, the Special Access Data includes information about

²⁷ [BEGIN HIGHLY CONFIDENTIAL] [REDACTED]

[REDACTED]

[REDACTED] [END HIGHLY CONFIDENTIAL]

²⁸ ILEC Economic Reply Comments ¶ 31.

cable providers offering dedicated services.²⁹ Those cable firms were included when counting the number of in-building and nearby providers.³⁰

C. Direction of Biases in the Estimated Coefficients

18. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ In my initial declaration, I identified six reasons why the estimated coefficients would be biased away from finding an inverse relationship between the number of rivals and price. ~~[END HIGHLY CONFIDENTIAL]~~ The ILEC economists do not question any of these reasons. Instead, the ILEC economists claim that my analysis does not account for two additional possibilities that could bias the results in the opposite direction: missing price data, or the possibility that CLECs enter where costs of service are low (endogeneity of entry). ~~[BEGIN HIGHLY CONFIDENTIAL]~~ For the reasons indicated below, nothing in the ILEC Economic Reply Comments leads me to question my view that the estimated coefficients in the regression results I present are most likely biased away from finding an inverse relationship between the number of rivals and price. ³¹~~[END HIGHLY CONFIDENTIAL]~~

²⁹ See Instructions for Data Collection for Special Access Proceeding, WC Docket No. 05-25, RM-10592 (Dec. 5, 2014) at 2 (indicating that cable systems operators must respond if they provide dedicated services).

³⁰ If the cable provider had a fiber connection but was not offering dedicated services, no price would be reported for the connection but the connection was counted when identifying in-building or nearby competitors. Cable connections identified on the National Broadband Map that were not identified in the Special Access Data were not included. Those connections may be used, among other things, to provide best efforts broadband, which is not a substitute for dedicated services, and services to residences, which are not locations where dedicated services would be purchased.

³¹ Verizon also argues that my regressions are flawed because the ILECs do not price on a building-specific basis, but instead provide uniform prices across large geographic areas. Verizon Reply Comments at 28,

1. Endogeneity of Entry

19. For the reasons indicated in section II.B.1, missing price data does not bias the results in the way the ILEC economists postulate. This section explains why the endogeneity of entry is also unlikely to do so.

20. The ILEC economists' theory is that CLECs are more likely to enter at locations where their costs are low and bandwidth demand is high, such as urban centers and office parks.³² Were that to occur, they continue, prices would be low (because costs are low) and the number of rivals would simultaneously be high (because demand is high).³³ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ This entry endogeneity story purports to explain why the number of rivals would be inversely related to price even if added rivals do not increase competition. It could bias the regression results toward finding an inverse relationship between the number of rivals and price, the opposite direction of the biases I identified. Because the ILEC economists do not question the direction of the biases I

33. ~~[BEGIN HIGHLY CONFIDENTIAL]~~ As I explained in my initial declaration, such policies make it difficult to observe the influence of rivalry in data limited to a single year, and provide a reason why the regression results understate the inverse relationship between the number of rivals and price. Baker Decl. ¶ 94 (discussing the consequences of ILEC wholesale pricing policies for the regression results). ~~[END HIGHLY CONFIDENTIAL]~~

³² ILEC Economic Reply Comments ¶ 34.

³³ *Id.*

identified, they conclude that the net bias, accounting for all possibilities, could go in either direction.³⁴ ~~[END HIGHLY CONFIDENTIAL]~~

21. The ILEC's theory of bias based on endogeneity of entry is implausible, however, because the regressions include fixed effects for census tracts and a control variable that increases with (the logarithm of) bandwidth. Given the small size of most census tracts,³⁵ the location fixed effects would be expected to remove most variation in cost that depends on distance between the customer and the provider's fiber facilities. Other costs of serving buildings may vary within a census tract, such as building access fees or costs of obtaining rights of way. But the latter costs are unlikely to be correlated with the bandwidth demanded by all the customers in a building, which the ILECs presume to be related to the number of firms serving that building. Even if those costs were correlated with bandwidth, moreover, the control variable accounting for bandwidth would help account for that correlation,³⁶ removing the possibility of the bias the ILECs hypothesize.

³⁴ ILEC Economic Reply Comments ¶ 38.

³⁵ ~~[BEGIN HIGHLY CONFIDENTIAL]~~ The median census tract in which dedicated services are provided is 1.9 square miles in size nationwide, ~~[BEGIN HIGHLY CONFIDENTIAL]~~ [REDACTED]

[REDACTED] ~~[END HIGHLY CONFIDENTIAL]~~

³⁶ The regression equations can be thought of as reduced form relationships explaining price. If costs are correlated with bandwidth, controls for bandwidth would appear in the underlying structural equations for both supply and demand, and the bandwidth control in the regression would account for the net effect on price.

2. Instrumental Variables Estimation

22. The ILEC economists also observe that I did not seek to correct for the biases I identified through instrumental variables estimation.³⁷ To do so would require identifying instruments with the appropriate statistical characteristics. Yet the ILEC economists did not suggest any specific, observable instruments that might have these characteristics,³⁸ nor make any other attempt to correct these biases through estimation. Hence their reference to instrumental variables estimation is an academic discussion, not a criticism of my report.

III. Other Issues

A. Bidding Markets

23. The ILEC economists, in their reply comments, claim that dedicated services markets are subject to “intense competition” even if an ILEC competes with only one CLEC (including a cable firm providing dedicated services), either in the same building or nearby.³⁹ This claim is a version of the incorrect assertion that in bidding markets, two firms, or even one firm subject to potential competition from an entrant, is enough to create a

³⁷ ILEC Economic Reply Comments ¶ 36.

³⁸ My reference to instrumental variables estimation in a footnote was presented in order to clarify one of the six statistical issues I discussed, and did not identify specific, observable instruments that would be appropriate for addressing that or any other statistical issue in the regressions. Baker Decl. ¶ 74 n. 62.

³⁹ ILEC Economic Reply Comments ¶ 13 at 11 (“[W]ith even one competitor connected to (or nearby) a building, customers within the building will generally enjoy the benefits of intense competition among providers”).

competitive market. I explained why this assertion is incorrect in my reply declaration.⁴⁰

B. High Wholesale Prices

24. AT&T and Verizon dispute my conclusion, which is based in part on the FCC’s Special Access Data, that ILECs often charge a high price for wholesale connections relative to the retail price they charge for similar connections.⁴¹ But neither presents any data analysis, whether based on the FCC’s Special Access Data or its own internal records, that shows otherwise.

25. Moreover, neither AT&T nor the ILEC economists question my observation that ILECs may have an incentive to raise wholesale prices in order to limit the possibility that the resulting retail competition would result in lower ILEC retail prices.⁴² Verizon contends that exclusionary pricing behavior “is exceedingly unlikely once facilities-based competitors have entered the marketplace” on the view that if a facilities-based rival later exits, its facilities would be purchased by some other firm and remain in the marketplace.⁴³ The contention’s limitation to conduct after CLEC entry appears to concede that an ILEC can prevent such entry through

⁴⁰ Baker Reply ¶¶ 11-13.

⁴¹ AT&T Reply Comments at 50 n. 132 (citing Baker Decl. ¶ 38); Verizon Reply Comments at 37-38.

⁴² Baker Decl. ¶ 38 & ¶ 38 n. 30.

⁴³ Verizon Reply Comments at 36.

exclusionary pricing. In addition, the argument is concerned only with whether exclusionary conduct leads to CLEC exit. It does not address the ability of an ILEC to maintain market power at retail after CLEC entry has occurred by discouraging aggressive retail price competition from CLECs (whether or not it induces CLEC exit).⁴⁴

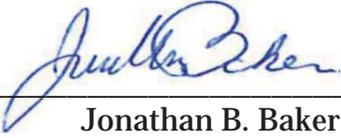
IV. Conclusion

26. Nothing in the reply comments filed by any ILEC, or the ILEC economists, leads me to question the conclusion I reached in my initial report that ILECs likely exercise market power in most dedicated services markets and would be expected to charge prices above competitive levels unless prevented by regulation.

⁴⁴ See generally Baker Reply Decl. ¶ 14-16 (discussing the incentive and ability of a vertically-integrated ILEC to exclude CLEC rivals and harm competition by setting a high wholesale price relative to its retail price (*i.e.*, by creating a “price squeeze”), with references to the economic literature).

REDACTED – FOR PUBLIC INSPECTION

I declare under penalty of perjury that the foregoing is true and correct to the best of my information and belief.



Jonathan B. Baker

Executed on March 1, 2016